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3. The French Polar Research Expeditions 1948-1951, a report by Paul E. Victor covering the organization and purposes as well as the preliminary expedition to Greenland in 1948 and the following one in 1949-1950. A short summary of the 1950-51 program is also included.

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4. Summary of Exchange and Foreign Trade Regulations, January 1, 1951 [redacted]

5. [redacted]

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8. Fuji Bank Bulletin, Vol. I, No. 4, Jan 51; published quarterly by the Fuji Bank Limited, Tokyo. Contents of this issue: "Time for Another Turn in Japanese Economy"; "Regarding Bank Loans in Japan"; "Copper, Lead and Zinc in Japan"; "Recent Trend in Supply and Demand of Sulphite Pulp"; "Statistics".

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MEDICAL CARE INSURANCE IN WESTERN EUROPE

A REPORT OF RECENT OBSERVATIONS AND IMPRESSIONS

INTRODUCTION

Many thinking Americans today are attempting to make up their minds whether they approve President Truman's plan for National Health Insurance. They are given to understand that the American Medical Association is an evil influence because it was able to spend the sum necessary to publicize its recent campaign "Keep Politics Out of this Picture." They are led to believe there is an easier way to meet medical care costs than by having individually to pay the doctor's bill. "Substitute National Health Insurance for old-fashioned ideas. Doctor-patient relationships will not be disturbed. There is no resemblance to socialized medicine." So they are told; so they are promised. They are also given to believe that the United States is one of the few countries in the world that has not already adopted a system of public medicine; that we are behind the rest of the world in our sense of social responsibility; that we should move quickly to catch up with the presumably superior programs that can be copied from the experiments of more enlightened nations.

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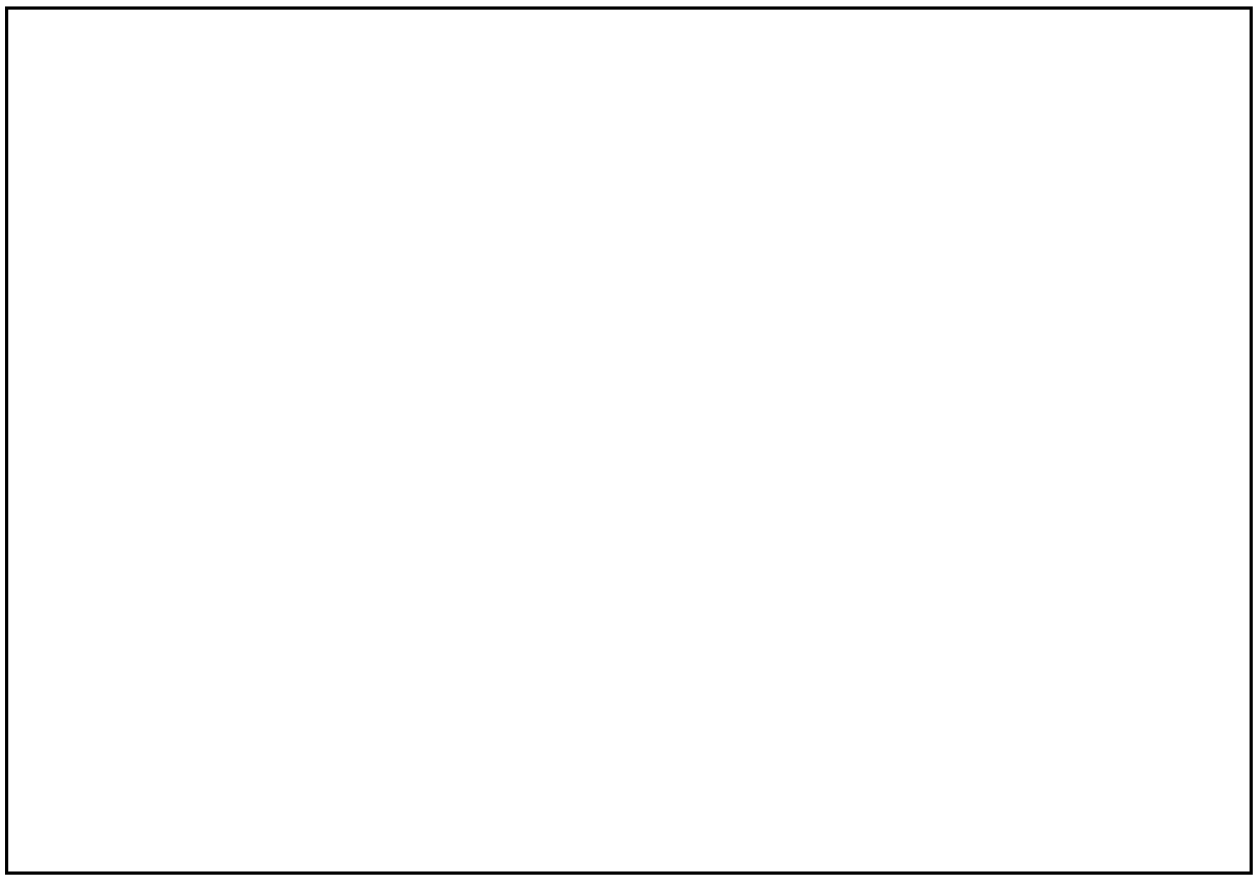


ENGLAND

Background

Before July 5, 1948, the effective date of the National Health Service, 20 million people in England and Wales (about 50% of the population) were entitled to receive free treatment from their family doctor under the National Health Insurance Act of 1911. This Act made it obligatory for all manual workers, and white collar workers below a certain income level, to pay health insurance premiums to Friendly Societies approved by government to administer the program. In return for premiums paid, such workers received medical care without additional charge from the general practitioners with whom they chose to register. The insurance also covered the cost of medicines prescribed by these doctors. Although statutory benefits did not include specialist advice or hospital treatment, some Societies used surplus funds to provide additional benefits covering part of these costs. The law made no provision for wives and children of insured workers, or for workers who had reached retirement.

During World War II, the Coalition Government authorized an exhaustive investigation of existing social insurance plans with a view to improving their organization and effectiveness. End products of this study were the National Insurance Scheme providing illness, unemployment, widowhood, retirement and other benefits in return for regular weekly contributions, and the National Health Service providing free medical care, regardless of contributions, to the entire population of England and Wales (over 43 million). With the adoption of the Health Service Act, England broke completely with past experience to launch the most ambitious experiment in medical care to be found in Western Europe.

The National Health Service

Benefits

Benefits provided by the Service include: 1) free treatment from family doctor and dentist; 2) free hospitalization, including all specialist treatment; 3) free local and home health services, including vaccination and immunization, midwifery, maternal and child welfare, and ambulance services; 4) free drugs and medicines on prescription of doctors or dentists; 5) opthalmic services; and 6) surgical and medical appliances.

Administration

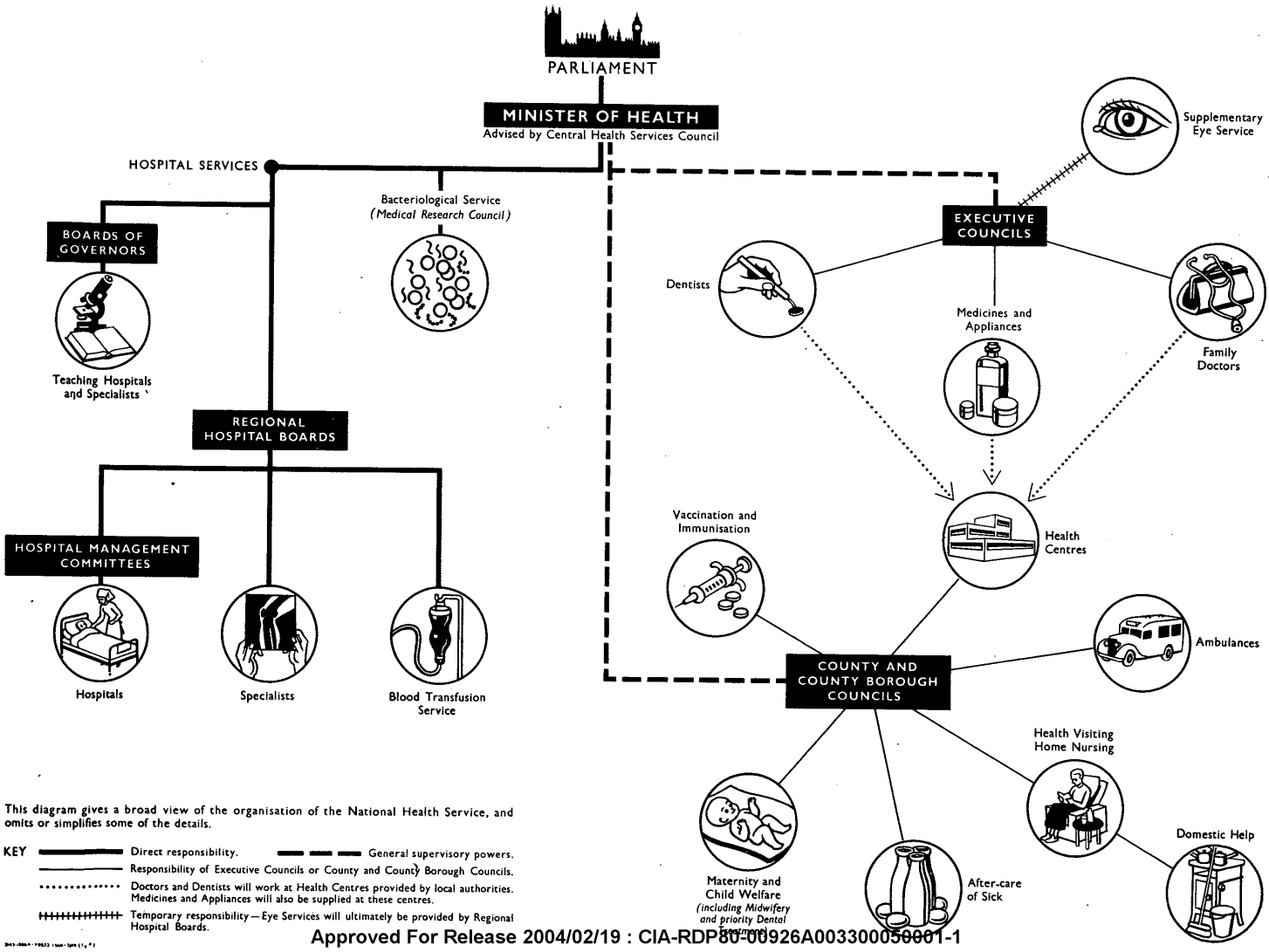
Responsibility for administering this program rests with the Minister of Health, who is answerable to Parliament for efficient running of the four branches of the Service - General Practitioners', Dental, Hospital, and Public Health. Theoretically, administration of the Service has been carefully decentralized by the appointment of unpaid volunteers to operate the plan at the regional and local levels. But as the chart indicates, the Minister has direct control over the hospitals and broad supervisory powers over the other three branches.

All but 200 of Britain's 3,000 hospitals were taken over by the government on July 5, 1948; only the small "cottage hospitals" and certain institutions operated by religious orders were left outside the Service. The country was divided into 14 regions, each with a university and teaching hospital, and responsibility for the hospital system in each area was vested in Regional Boards appointed by the Minister. These Boards, in turn, named 377 Hospital Management Committees to supervise day-to-day operation of the hospitals. The Minister also appointed a separate Board of Governors to supervise each of the 36 teaching hospitals.

The General Practitioners' and Dental Services were organized by 138 Executive Councils (one for each County Council and County Borough), each composed of 12 members chosen by local doctors, dentists and pharmacists, 8 selected by the local health authority, and 5 appointed by the Minister of Health. Responsibility for the Public Health Services was left with the County and County Borough Councils, which were assigned specific duties under the Act.

Participation of Doctors and Dentists

Although the medical profession was vigorously opposed to the idea of a National Health Service before it became actuality, about 90% of Britain's 21,000 general practitioners are now participating in the plan. This high enrollment was achieved by a clever piece of strategy on the part of government -- a ban on the buying and selling of practices. Prior to the Health Service, it was often customary for a young doctor to start his career by buying the established practice of a retiring doctor. He, in turn, counted on the sale of the practice to provide him with an income after retirement. By abolishing the buying and selling of practices, therefore, the government armed itself with an effective economic club to coerce general practitioners into the Health Service. Few could afford to sacrifice their initial investment in the practice by remaining outside the Service, and if they joined, the government not only "bought" their practice but also provided them with a pension at retirement.



This diagram gives a broad view of the organisation of the National Health Service, and omits or simplifies some of the details.

KEY
- Direct responsibility.
- General supervisory powers.
- Responsibility of Executive Councils or County and County Borough Councils.
- Doctors and Dentists will work at Health Centres provided by local authorities. Medicines and Appliances will also be supplied at these centres.
- Temporary responsibility—Eye Services will ultimately be provided by Regional Hospital Boards.

Family doctors taking part in the Health Service may choose between two forms of remuneration: 1) a per capita fee for each patient registered with them or 2) a fixed sum of £300 plus reduced per capita fees. In order to attract doctors to socially or financially unpromising localities additional "inducement" payments are made to physicians practicing in such areas. Mileage allowances are also granted in the rural districts. Most family doctors are receiving much the same income now as they did before the Act, though they are working much harder to earn their money. Only those physicians practicing among the upper income groups have suffered financially. Some of this group have remained outside the Service or retired from practice altogether. Additional allowances from the "inducement fund" have persuaded others to take part in the program.

Participating doctors are allowed a maximum of 4,000 public patients on their panels. Both the physicians and the Ministry realize that this is too great a number for one doctor to treat properly, but shortages of personnel make such a high quota necessary. General practitioners are free to accept or reject Health Service patients; they may also accept private fee-paying patients. In general, they have a wide choice of localities in which to practice; only certain "over-doctored" districts are closed to newcomers.

Specialists and consultants can take part in the Service only by holding a hospital appointment, for which they receive a salary based upon their specialist rating and the amount of time devoted to Health Service cases. Only 5% of Britain's specialists are full-time salaried physicians; the rest accept part-time appointments and take fee-paying patients outside the Service. They have a limited number of beds at their disposal for use of private patients. Only by becoming a private patient can an Englishman secure the surgeon he wants. If he enters the hospital on referral from his family doctor, he is treated by the specialist assigned him.

All dentists are free to participate in the health program and may accept private as well as public patients. Since the beginning of the Service, the dental profession has been the scourge of the Ministry and the envy of the doctors. In the first place, the dentists' threat to remain outside the program unless they were paid on a fee-for-service basis forced the government to comply with their demands. Secondly, the scale of fees based upon a study made by the Spens Committee produced average incomes far exceeding the Spens estimate of a fair salary. As a result, costs of the Dental Service have skyrocketed, while the dentists have reaped a harvest. When an emergency measure set a ceiling on their earnings from public patients, they refused to accept additional Health Service cases. Although two reductions (totalling 30%) have been made in dental fees, the Ministry is still seeking new ways to control dental costs.

Financing

The British Health Service is not an insurance plan but a tax-supported government agency. Its facilities may be used by anyone regardless of his status with respect to the National Insurance Scheme. Contributions from the Insurance Fund cover about one-tenth the cost of the program; the balance is financed by the National Exchequer.

Problems

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1. Cost

Government's most critical problem in connection with the Service is its cost. Confronted with urgent requirements for better food and more adequate shelter, leaders in both political parties now wonder how much "health" their country can support. Some believe that too much of the national income is devoted to curing ills resulting from poor nutrition and sub-standard housing. If less were spent on the Health Service, they reason, a greater amount would be available to improve more essential elements of the living standard. This, in turn, would lead to better health, less demand for medical attention, and a reduction in cost of the program.

The Ministry claims that the Service is being run with a strict eye to all possible economies. Granted, only the most urgent construction has been authorized and not a single Health Center has been built. Yet in spite of these "economies", expenditures during the first two years have far exceeded original estimates.

The government recognizes that competition among the people to get the maximum amount of "free" service is a primary cause of soaring costs. Yet neither political party dares to advocate constructive measures to correct this situation. Both Socialists and Conservatives fear they will commit political suicide if they attempt to curb abuses of the health facilities by imposing limitations on benefits. Thus, although the Minister was empowered by a 1949 Amendment to require people to pay part of the price of prescriptions, this practical method of reducing costs has yet to be tried. Since political considerations prohibit real economies, there seems to be little chance of establishing the program on a sound financial foundation until people learn to use its facilities wisely.

2. Cursory examinations

Stories of "three minute medicine" which circulate in this country are dismissed as "fear propaganda" by Mr. Ewing and his associates, but the necessity of cursory examinations is a cause of great distress to British doctors. One of them told us that he frequently sees 45 people in 90 minutes, then added, "What kind of medical care do you call that?" Although not undisturbed by this situation, Ministry officials claim it to be a temporary condition caused by shortages of personnel and facilities necessary to meet the overwhelming demand for medical attention. They believe that the problem will be solved gradually as the supply of doctors and nurses increases and as health centers are built.

3. Hospital admissions

In order to ease their own loads, many family doctors now refer patients to hospitals more readily than in the past. This practice has aggravated the shortage of beds created by heavy destruction of hospitals during the war. As a result, a 350 bed hospital may have as many as 2,000 patients waiting for admission, and most of the large hospitals are so crowded that only serious emergencies will be admitted at once.

4. Rush for drugs

The prescription problem is vexing both the medical profession and government. Since the Ministry declares the Health Service to be a "first-rate" service, family doctors are expected to prescribe the "best" drugs for their patients. The British people have been quick to seize this opportunity to satisfy their penchant for expensive patent medicines. Most of these proprietary drugs are no more effective than their pharmacopoeial equivalents, yet the public demands them because they are highly advertised and attractively packaged. Fear of losing patients to a more obliging competitor compels many a doctor to yield to demands for proprietary drugs. By doing this, however, he runs the risk of being called to account by the Executive Council, which enforces sanctions against extravagant prescription.

Faced with a yearly drug bill which accounts for one-twelfth the entire cost of the Health Service, the government is equally embarrassed by this problem. Although the Minister of Health advises doctors to prescribe proprietary drugs judiciously, he is reluctant to curtail their prescription drastically because profits on patent medicines support research conducted by the pharmaceutical houses. Were it not for the initiative of drug

companies, development and testing of new medicines would virtually cease, since the Ministry itself is not prepared to undertake such research.

5. Poor coordination between branches

When the Health Service was a blueprint, its supporters advanced in its favor the compelling argument that it would integrate the work of public health authorities, general practitioners and specialists to provide the most effective overall program of preventive and curative medicine. In practice, the Service has sadly failed to realize this objective. In some instances, it has even widened existing cleavages between different groups.

Prior to the Health Service Act, local authorities had made great progress in the coordination of all health facilities within their jurisdiction. Their efforts received a severe set-back when the Minister took over responsibility for all hospital services. Public health work is now frequently disrupted by breakdowns in liaison between local authorities and hospital authorities. For example - before the Health Service Act, control of tuberculosis among the 3,500,000 inhabitants of London County was exclusively a function of the Council, public health authority for the area. Now, however, diagnosis and treatment are a function of the hospitals, prevention and after-care a responsibility of the health authority. Nine different central government agencies are presently involved in the control of this disease.

The Health Service has also aggravated the dichotomy between general practitioners and specialists by barring family doctors from the hospital. Once he has referred a patient for laboratory tests or specialist diagnosis, the practitioner loses contact with the case. Because they do not have the opportunity to work together, neither the family doctor nor the specialist gets a complete picture of the patient's condition. This situation makes it impossible to maintain the continuity of diagnosis, treatment, and after-care essential to restore patients to the highest possible level of health.

Attitude of Medical Profession

Long before the Beveridge study was authorized, the British Medical Association had advocated that government take a larger part in organizing and subsidizing health services. According to the joint Deputy Secretaries of the BMA, the profession took the stand that comprehensive medical care for all the people could not be achieved without help from the state. Apparently no thought was given to the

possibility of joining forces with the insurance industry to meet the need by expanding coverage under the existing program.

Although the BMA was ready to let the state play a larger role in the provision and financing of medical care, it was certainly not willing for government to take complete control, as indicated by the bitter opposition to passage of the Health Service Act. Nevertheless, the profession has made an honest effort to adjust itself to the program. After two years, however, only the dentists and specialists are reasonably content with their lot.

Medical Association officials believe that the Minister of Health deliberately divorced general practitioners from the hospital in order to produce an "assembly line" type of medical care. It is certainly a fact that the Health Service has confined family doctors strictly to the treadmill of daily calls and office hours. Their reaction to this situation is understandable. Denied the stimulation which access to diagnostic facilities and consultant opinion would provide, they are rapidly losing their incentive and their enthusiasm. Professional frustration is breaking the spirit of young, ambitious physicians who cannot find time in practice to apply the special techniques developed in medical school or learned in "refresher" courses offered by the government.

Also detrimental to the family doctor's morale is the fact that his patients tend to regard him not as a friend and medical advisor but as an "official" whose main duties are to satisfy demands for prescriptions and make arrangements for X-rays and laboratory tests. Thus, although Health Service supporters claim that the program does not interfere with the doctor-patient relationship, it has actually altered this relationship considerably.

But the doctors' chief complaint is the failure of the program to put first things first. A recent editorial of the British Medical Journal reiterated this grievance as follows: "The shocking waste of public money over the inessentials of medicine has left little over for what is more urgently needed... It is difficult to see how the N.H.S. can be put on a sound footing and the full resources of modern medicine be at the disposal of the public without considerable readjustment of its economy. The medical profession is discontented and disillusioned not because of payment, or lack of it, for this or that, but because it sees postponed indefinitely the opportunities for improving the medical care of the people."

Comment

Insofar as the Health Service is a plan under which the middle and upper classes help subsidize medical care for low income groups, it may be regarded as another manifestation of the social and economic upheaval taking place in England during the past ten years. But to explain the Health Service as just another result of a new social philosophy is to ignore the psychological factors largely responsible for its ready acceptance.

It must be remembered that England's health program was conceived during grim years of war when men took refuge from despair in brave plans for the future. War's end found the British ready to embrace almost any program which promised to fulfill their understandable longing for an end to suffering and needless death. Unfortunately, their impatience to remedy a desperate situation led them to adopt a plan so ambitious that it cannot be implemented to produce promised results.

SWEDEN

Organization of Medical Care

Sweden's medical care program is based upon a highly developed system of public medicine, with insurance playing a relatively minor role in financing costs. Health standards in this country are exceptional, as indicated by an average life expectancy which betters that of any other country except New Zealand and Holland. The system producing these results had its beginning more than 250 years ago in a social welfare measure which put medical care within reach of even the poorest by creating an institution unique to Sweden - a network of provincial doctors hired by government to carry on public health work and to treat patients at fixed low fees. These salaried doctors are responsible for all routine medical care not requiring specialist skills. Assisted by public health nurses, they have attained outstanding results in both preventive and curative medicine for those residing in rural localities. In urban areas, municipalities employ doctors for duties roughly similar to those of provincial physicians. Inexpensive medical care is also available at out-patient departments of large city hospitals.

Consistent with the Swedish belief that medical care is a community responsibility, provincial and municipal councils are legally responsible for organization of hospitals for physical diseases. The national government is responsible only for military and mental hospitals and two physical disease hospitals operated in connection with medical colleges. Staff doctors are salaried physicians hired by the provincial or municipal councils. They devote about half-time to public patients, half-time to fee-paying patients for whom a few private beds are available. Many of them also maintain outside clinics for treatment of private patients.

Most provinces and municipalities have set up a well-integrated network of hospitals which make all types of service available at nominal cost. Even in Stockholm's South Hospital, one of the finest in the world, the average cost per patient does not exceed $7.00 a day, including diagnosis, X-ray, and surgery. Patients in its four-bed wards are charged less than one-seventh this amount; the balance is borne by the municipality. If a patient is destitute and has no insurance protection, his bills are paid by the local welfare society. Because private hospitals cannot compete with the low fees of the public institutions, they are practically non-existent; only 2% of Sweden's hospitals are privately owned.

Voluntary Insurance Program

25X1 Sweden is the only country [redacted] which still has a completely voluntary health insurance program. Although a resolution for universal compulsory health insurance was passed by the Riksdag in January, 1947, the government has postponed its effective date indefinitely. At present, 60% of the entire population of 7,000,000 is participating in the voluntary program instituted by the Sickness Insurance Act of 1931. Any individual between the ages of fifteen and fifty who has no existing disability may join the semi-public organizations approved by government to furnish coverage under the Act. If he joins with a group, however, limitations with respect to age and health are waived. Children under fifteen are covered by their parents' policies. There is no upper age limit at which membership must be discontinued.

Administration

Before the 1931 Act, health insurance was furnished by mutual associations similar to the British Friendly Societies. The Sickness Act linked associations approved by the national government into a countrywide network of societies and made them responsible for administration of the program under supervision of the Royal Pensions Board. However, only one society in each locality was approved to furnish the basic coverage prescribed by law. This feature of the Act eliminates the possibility of competition among associations since individuals are obliged to join the society in their own locality. This monopoly does not seem to operate to the disadvantage of the public - at least not from the standpoint of cost. In fact, the societies are more prone to err on the side of inadequate rather than excessive rates. One of the main functions of the Pensions Board, therefore, is to prevent associations from lowering rates to a level which might jeopardize solvency.

Benefits

Coverage under the voluntary program combines benefits for medical care with cash disability allowances.

1. Medical care benefits

Society members have free choice of family doctor. Their insurance covers two-thirds of their routine medical bills in accordance with a fee schedule agreed upon by the insurance societies and the medical boards and approved by government. This fixed scale of charges, however, is not binding, and a member

whose doctor does not observe the schedule must assume the additional expense himself. Although few doctors abuse the privilege of asking higher fees, the threat of compulsory insurance has caused the Swedish Medical Association to exhort its membership to even stricter observance of the approved schedule. The patient pays the bill, then files claim with his society and receives the two-thirds reimbursement to which he is entitled. The Swedes believe this method of payment essential to keep the insurance program from interfering with the doctor-patient relationship. Although the cost of drugs is not covered by the policy, many societies pay half the cost of medicines prescribed by family doctors. There is no limit on the duration of benefits for routine medical attention.

Insurance societies pay directly to the hospitals the full cost of treatment and ward maintenance, in accordance with prevailing rates. Benefits are paid for a period of at least two years for the same illness. The policy also covers the cost of transportation to the nearest suitable hospital. Patients desiring a private room must pay the extra charge themselves, unless they have provided for this additional expense by the purchase of supplementary coverage from private companies not authorized to write the basic insurance. Insurance patients do not have free choice of specialist, but the Swedes do not object to being treated by staff physicians since they are among the best available.

Because a special law now provides free midwifery service and free care during confinement, these benefits are no longer paid by the insurance associations. However, the policy does provide insured women with a lump sum benefit of 110 - 135 crowns. (The Swedish crown can be considered equivalent in purchasing power to our half-dollar.)

2. Cash disability allowances

Minimum benefits for loss of income during illness are paid at a rate of one crown a day for a period of at least two years for the same illness. Payment of additional premiums may increase this allowance to as much as six crowns a day. There is a waiting period of three days before benefits are payable. Supplementary insurance for higher benefits may be purchased from private companies not authorized to furnish the basic coverage.

Financing

Two-thirds the cost of the voluntary program is financed by premium income. Premium rates vary throughout the country, reflecting differences in economic conditions between one locality and another and

differences in the financial position of the various sickfunds. Society members may pay as little as one crown a month for medical benefits and the basic cash disability allowance. Members pay premiums directly to their local society, unless they are insured as one of an employee group, in which case the employer forwards their premiums to the sickfund. (Even though employers do not share the cost of the insurance, they may make the purchase of health insurance a condition of employment.)

Government subsidies supply the remaining funds necessary to support the program. These grants are distributed among the societies on the basis of a flat amount per member. The government is currently contributing $10,000,000 a year to maintenance of the voluntary program.

Proposed Program for Universal Compulsory Insurance

The primary purpose of the compulsory health insurance resolution is to provide cash benefits in case of illness. The insurance would also cover three-fourths the cost of routine medical treatment. Hospitalization, however, would not be covered by the program. A companion resolution would make free treatment and maintenance in public wards available to every citizen, with government assuming that part of the cost now paid by the patient or his insurance society. Medicines would be provided either entirely at state expense or at reduced prices. Maternity benefits and dental care would also be provided under separate plans.

Under the compulsory program, coverage would be extended to the entire population, either as contributing or non-contributing members. With a few minor exceptions, all Swedes would be obliged to contribute to the plan unless covered as family members (wives of contributing members and all children under 16).

Administration

Responsibility for carrying out provisions of the compulsory law would be delegated to sickness funds now furnishing voluntary coverage. Their activities would be carefully supervised by the Royal Pensions Board, which would advise them in the discharge of their functions, review their financial position, and calculate and distribute state subsidies.

Benefits

Under the compulsory program, medical benefits would be payable to all members and their families, cash sickness benefits to all gainfully employed members.

1. Medical care benefits

Unlike the British program, the Swedish proposal would not provide completely free medical care. By requiring patients to assume 25% of the cost of routine medical attention, its advocates hope to discourage abuse of the service and thus avoid some of the woes afflicting the English system. Moreover, the medical profession believes that such token payments often have psychological value in speeding the patient's recovery. As under the voluntary program, patients would retain free choice of physician, and doctors would not be obliged to follow the established fee schedule.

2. Cash disability allowances

Daily cash sickness benefits under the proposed plan would be substantially higher than under the voluntary program (basic daily compensation 3.50 crowns).[1] Since the drafters of the resolution believe that the compulsory insurance should furnish an adequate living standard during illness, benefits would be paid at a standard rate, irrespective of earnings. After a three-day waiting period, allowances would be provided for a maximum of two years for each illness.

3. Voluntary benefits

Members who are in good health and under 55 may supplement compulsory benefits by paying additional voluntary premiums to the central society with which their local association is affiliated. Medical benefits may include massage, corrective gymnastics, and other therapeutic treatments. Cash disability benefits may go as high as eight crowns daily, provided that the amount of combined compulsory-voluntary health insurance, workmen's compensation payments, and any private insurance do not exceed wages lost. Thus it is possible for Swedes to purchase complete protection against loss of wages during illness. This, of course, is contrary to an accepted principle of cash disability insurance in the United States.

1) Detailed schedule of benefits will be found in appendix, page 40.

Financing

Very substantial state subsidies - about 70% of total costs - would support the proposed compulsory program. The balance would be financed by members' contributions, collected together with state taxes and distributed among the societies by the Royal Pensions Board. Contributions for the basic benefit would average about 24 crowns yearly, the exact amount depending upon the financial position of the local association. Although non-payment of contributions would not disqualify members from receiving benefits, they would be liable for prosecution in accordance with tax laws.

State contributions to encourage voluntary insurance under the plan would amount to 20% of total costs.

Attitude of Medical Profession

Although the Swedish Medical Association is not unalterably opposed to a program of universal compulsory health insurance, it does fear certain features of the proposed plan:

1. Although the compulsory resolution would supposedly retain the fee-for-service method of paying general practitioners, the doctors are afraid that once the program were activated a capitation system similar to Britain's might be imposed. The Association objects vigorously to this method of payment.

2. The doctors fear that the public will abuse the system. Like most other countries, Sweden has a shortage of doctors and hospital beds; the Medical Association is afraid that this condition would be aggravated by extending free medical services to the entire population. The doctors have actively supported the principle of a token charge for routine medical care in the hope that this provision may curb abuse of the general practitioner service. Even so, they are afraid that if the resolutions should be executed in the near future, the program would swamp existing facilities and thereby lead to lower standards of medical practice.

3. Their most strenuous objection to the proposed reform concerns the companion resolution which would have government assume the cost of hospitalization now paid by patients or their insurance companies. The medical profession fears that this arrangement would lead to state control of hospitals. Dr. Stig Berseus, head of the Serafimer Hospital (one of the two physical disease hospitals run by the national government) cited several instances in which his efforts to effect improvements in medical care at the Serafimer had been hampered by bureaucratic red tape and pointed out that freedom from state interference enabled municipalities and provinces to run their hospitals much more efficiently. Such experiences with state-run institutions have convinced the SMA

that responsibility for hospitals should remain entirely in the hands of local communities.

Attitude of Insurance Societies

In a discussion of the proposed plan with officers of the Stockholm Sickness Fund, Sweden's largest approved society, we were told that the sickness funds generally favor the compulsory program. Since they would continue as administrative agents for the state, they would have little to lose and much to gain. Under the compulsory system their business would be automatically increased. The proposed law would overcome the problem of adverse selection by compelling participation of the healthier members of the community who tend to remain outside the voluntary program. Finally, the compulsory system, by making people more insurance conscious, might increase their volume of voluntary insurance for additional benefits.

Comment

No one in Sweden ventured to predict when the compulsory law might become effective. Sweden's leaders see more clearly than Britain's that a realistic health program must be geared to their country's economic strength. With one-fifth to one-third of the national budget currently committed to an expanded military program, it is the consensus that the nation cannot presently afford an annual outlay of some $50,000,000 for a cash disability-medical care program for the entire population.

The Swedes realize also that good health cannot be legislated arbitrarily - that shortages of doctors, nurses and hospital facilities cannot be overcome by the simple stratagem of increasing state influence in the field of medicine. Even Dr. Axel Höjer, head of the Royal Medical Board and ardent advocate of universal compulsory health insurance, conceded that it would be folly to rush the proposed reform until these shortages are filled.

With good medical care available to all, regardless of ability to pay, it is difficult to claim a need for universal compulsory health insurance. But this is of small consequence to the Socialists, who are sponsoring health insurance as part of a program designed to transform Sweden into a proper welfare state. Although they realize that practical considerations make such a step inadvisable at present, they have no intention of abandoning the project.

SWITZERLAND

Organization of Medical Care

Organization of medical care facilities is considered a community responsibility in Switzerland. Although the cantons (states) do not provide a free family doctor service, routine medical care is available without charge to those who cannot afford to visit private doctors. In urban areas, such attention may be obtained at outpatient departments of public hospitals; in the mountain districts, it is provided by public health doctors and nurses.

Free hospital maintenance and treatment for those without means is available in the wards of private charitable institutions or public hospitals subsidized by the canton. Staff physicians of public hospitals are paid as civil servants by the canton and devote about half their time to public patients, the rest to private practice. Roughly 20% of Swiss hospital patients have their bills paid by the canton.

Health Insurance Program

The pattern of health insurance in Switzerland is a mosaic of partially compulsory, partially voluntary coverage. The Confederation encourages the growth of low-cost voluntary insurance by granting subsidies to all insurance companies (including "profit-making" companies as well as Mutual Aid Societies) which conform to provisions outlined in the Federal Health and Accident Insurance Law of 1911. Although primary emphasis is placed on provision of medical care benefits, cash disability benefits may be included in the coverage.

In addition to setting up standards which must be observed by approved companies, the 1911 Law stipulates that any canton may make health insurance compulsory for everyone or for particular age or economic groups. The canton, in turn, may delegate this authority to local communities (communes). Thus, within the framework provided by federal legislation there exists a variety of plans developed to meet specific state or community needs.

Administration

More than 1150 private and public organizations have been recognized by the Confederation to furnish the voluntary and compulsory

coverages. Although they are allowed some latitude in the amount and type of protection they offer, their contracts are subject to approval by the cantonal government. Districts which make health insurance compulsory often set up a Public Sickness Fund to cover those not affiliated with a recognized private company. Activities of Public Funds are supervised by the Cantonal Health Department.

Benefits

Benefits vary widely from one district to another. Some plans include dental care, physiotherapy, and appliances; others provide only for routine medical care, and treatment and maintenance in the hospital. Minimum benefits set forth by law are as follows:

1. Routine medical care

Family doctors' bills and the cost of prescribed drugs are paid in full for at least six months in a period of 360 consecutive days. If the policy provides a nine months benefit period, the company may require the insured to assume 25% of the charges for routine treatment.

The patient has free choice of physician unless his company has made agreements with particular doctors to provide medical care for their policyholders. In this event, his choice is limited to the practitioners listed with his company. Patients pay their own doctors' bills, then receive reimbursement from their company in accordance with the fee-for-service schedule of charges fixed by the cantonal governments after consultation with the insurance companies and the doctors.

2. Maternity benefits

These are payable for a period of at least six weeks.

3. Hospitalization

The insurance covers the full cost of treatment and maintenance in public wards of cantonal or private charitable institutions. Patients may secure semi-private or private rooms by paying the additional charge.

Financing

Since the 1911 Law provides that annual subsidies to recognized companies cannot exceed one-half the sum of premiums paid by members, at least two-thirds of total costs (for both the compulsory and voluntary

benefits) must be met out of premium income. Cantons or communes which have made insurance obligatory generally assume responsibility for contributions on behalf of their indigents and are entitled to reimbursement from the Confederation for one-third the amount so expended.

Premium rates vary from one locality to another. In some plans compulsory on low income groups, insureds pay a low initial premium based on income classification and then contribute directly to the cost of benefits actually received. Thus the rate is not only geared to the individual's ability to pay but also reflects his "loss experience".

Comment

For the extreme flexibility of its insurance program Switzerland is unique in Western Europe. Because the federal law allows the cantons and the insurance societies such latitude in providing methods for prepaying the cost of medical care, there is to be found in Switzerland, as in no other country visited, a wide variety of programs tailored to meet specific needs of particular localities and groups.

With compulsion left to the discretion of the cantons or communes, the proportion of people covered naturally varies from district to district. It ranges from 30% in cantons where insurance is compulsory for school children only, to 95% in cantons where coverage is obligatory for all but the high income groups. Taken as a whole, about 60% of the population is adequately protected against the cost of medical care.

The fact that the Swiss have just voted down (by an 80% majority) a proposal to make tuberculosis insurance compulsory for all indicates that political agitation for universal comprehensive health insurance would meet with a very cool reception. Disposed to manage their affairs with a minimum of federal interference, the Swiss are not likely to adopt legislation which would take health insurance out of the hands of the cantons and communes.

Switzerland is the one country in Western Europe with a constitutional structure comparable to our own. The Swiss have taken advantage of the flexibility of this federal system to adapt their health insurance program to the needs of different regions. If a relatively small and homogeneous Federation has followed such a policy with success, it seems reasonable to suppose that our own much larger and more diversified Union will find it even more worthwhile to retain a pluralistic approach, seeking to adjust the program to the needs of the community rather than the community to the needs of a centralized national program.

FRANCE

The pattern of health insurance in France today is almost as confusing as the political scene, probably because its development has been influenced so strongly by political considerations. All industrial and trade workers employed under contract of service are compulsorily insured for medical care and cash disability benefits under the 1945 Social Insurance Acts; agricultural workers are obliged to insure with "mutual aid" (non-profit) insurance societies; professional people are obliged to insure under a still different type of plan; and self-employed persons may insure voluntarily with mutual aid societies or with private companies.

Compulsory Insurance Under Social Security

Social insurance is divided into three sections: 1) social insurance risks (sickness, long-term sickness, disability, maternity, old-age and death); 2) occupational risks; and 3) family benefits. Conflicting political interests made it impossible to unify these three sections into one complete system. Medical care and cash disability benefits are provided under Section 1 to approximately 8,300,000 employed workers, who together with members of their families total nearly 17,000,000, or 40% of the population.

Administration

The Minister of Labour and Social Security is responsible to Parliament for the general policy of social security. Under the Minister the Directorate General prepares the necessary regulations and instructions for operation of the scheme and supervises the activities of the social security offices. The program is administered locally by 124 offices (funds) which are linked to 32 regional funds and through these offices to the National Social Security Fund. With the exception of the National Office, a state body, all the social security funds have the legal status of private institutions, are financially autonomous, and are subject to the same regulatory laws as the mutual aid societies.

Local offices are responsible for collection of social insurance contributions, payment of benefits, and other functions connected with day-to-day administration of the Social Insurance

Acts. They are managed by elected boards having 75% employee and 25% employer representation. These boards, in turn, elect management boards for the regional offices. In establishing such a system, it has been the intent of Parliament that insured contributors should be made responsible for the sound management of the funds collected for their security.

Benefits

Medical care benefits provided by the social security program are available not only to the insured but also to husband or wife, dependent children, and dependent relatives living in the same household. Cash disability benefits are payable only to the insured. To be eligible for benefits, the insured must have been employed for at least 60 hours in the three months preceding first proof of sickness, though right to benefit is maintained if he can prove unemployment during this period. Benefits are payable for a maximum of six months for any one illness.

The insured and his dependents are entitled to long-term sickness benefits for a maximum period of three years if he can prove one year's insurance and that he has been employed for 240 hours during the year, with 60 hours employment during the quarter preceding proof of sickness. He must also have been accepted for long-term benefit by the local office, which accepts persons only after submission to joint medical examination (by their own doctor and the medical advisor of the local office) to determine whether the illness falls within the scope of long-term sickness benefits. In case of disagreement between the two doctors, further examination is made by a specialist.

1. Medical care benefits

Social security members have free choice of family doctor, dentist, and chemist. They pay their own bills, for which they must receive reimbursement within 15 days. The social security scheme provides reimbursement for 80% of routine medical, dental, and pharmaceutical bills in accordance with a fee schedule fixed by agreement between the local funds and professional associations and approved by the National Scales Committee. Although both the doctors and the funds are supposed to adhere to this schedule, private doctors may charge higher fees if their own repute or the affluence of their patients seems to justify the difference. This extra cost is the responsibility of the patient.

Because more and more doctors are finding ways to circumvent the fee schedule, the average social security patient using a private doctor must assume about 40% of the cost of routine medical bills. Only by seeking treatment in the out-patient department of a public hospital can he be certain that his insurance will cover 80% of the cost, for polyclinic doctors are obliged to adhere strictly to the schedule. Recognizing that the approved charges are actually too low to provide doctors with a comfortable standard of living, social security officials are ready to increase the fee schedule if the doctors will agree to observe a higher scale of charges. Thus far the profession has refused to enter into any kind of agreement which would fix fees definitively.

The insured also has free choice of any public hospital or any private institution approved by social security authorities. (By this provision the French social security scheme permits a wider choice of surgeon than is allowed insurance patients in most European countries.) He is generally reimbursed for 80% of his surgical fees (again in accordance with a fee schedule), but in cases of serious operations or exceptional treatment he may receive a complete refund. Social security also pays 80% of the cost of ward care.

Other benefits payable under the scheme include ambulance service (80% of actual fee) and medical applicances and travelling expenses (in amounts varying with individual cases). Members covered for long-term sickness receive complete refund of the cost of treatment involved.

2. Cash disability benefits

Cash benefits for loss of income during illness are related to earnings. Social security members receive a daily allowance equal to one-half their basic daily wage up to a limit of 367 francs ($1.00*), an amount equal to 1/60th the monthly salary "ceiling" for the payment of contributions. There is a three-day waiting period before benefits are payable. After the 30th day of incapacity, the daily allowance is increased to two-thirds the daily wage for workers with at least three dependent children. For long-term cases the allowance is paid monthly and may be revised upward if a general wage increase takes place during the period of incapacity.

Financing

Unlike the situation in Britain, the French National Budget plays no part in financing medical care benefits provided by the social

security program. The entire social insurance system is supported by taxes ("contributions") on every worker's annual earnings up to a ceiling of 264,000 francs (about $800) and payable by employer and employee at the following rates: [1]

		Employer	Employee
1.	Social insurance risks	10%	6%
2.	Occupational risks (W.C.)	3%	
3.	Family allowances	16%	
4.	General tax	5%	
	Total	34%	6%

It is the duty of the employer to deduct employee contributions from wages and to pay the entire 16% tax for "social insurance risks" monthly or quarterly to the local social security fund. No estimates were available as to the amount of tax necessary to finance medical care and cash disability benefits alone.

Other Compulsory Health Insurance

When the 1930 Social Insurance Acts were remodelled in 1945 in an effort to establish a comprehensive and unified social security program, French peasants displayed their characteristic independence by thwarting all efforts to sweep them into the broad overall program. Thanks to their strong political influence, they succeeded in preserving their right to insure with mutual aid societies providing benefits equal to, and frequently higher than, social security benefits. These societies are regulated and partially subsidized by the state. Provision has been made in the law for transference of former rights when an agricultural worker enters an industrial trade.

Also insured compulsorily are professional workers, who are allowed to organize their own mutual aid societies. Each group may determine its rate of contribution based on the amount of benefits members wish to receive.

Voluntary Health Insurance

The self-employed may purchase low cost voluntary insurance from mutual aid societies subsidized by the state. These associations also sell voluntary insurance to cover the 20% difference

1) Based on total wages, the tax rate amounts to 25% for employers, 5% for workers.

between social security benefits and the total cost of medical care. Although the combination of social security and voluntary insurance provides employed workers with complete protection, it limits their choice of hospital to those which have made agreements with both the social security fund and the insurance society furnishing the supplementary coverage.

Comment

The admitted aim of the French social security scheme is to effect "a just and rational distribution of the national income." In the attempt to achieve this goal, industry has been saddled with a tax burden which is proving an impediment to production and thereby a hindrance to economic recovery from the war.

The health insurance program under social security is beset with certain problems reminiscent of the British Health Service. It cannot be denied, for instance, that the system is subject to abuse, though less from the public than from the medical profession. Social security members can ill afford to abuse a "service" which seldom reimburses them for more than 60% of the fees actually charged. The doctors, on the other hand, are lining their pockets under a system designed to provide greater economic security for the working class!

More serious, however, is the cleavage which has been created by tying one part of the nation's health program into the social security scheme, under the Ministry of Labour, while leaving other parts in the hands of the Ministry of Health. Political rivalry between these two bodies is now so intense that the possibility of developing an integrated program of general health maintenance is remote indeed. The only solution to the problem thus far advanced, a 1946 resolution to make health insurance compulsory for the entire population, was effectively blocked by opposition of the trade unions, the medical profession, and the professional people now insured with mutual aid societies.

THE NETHERLANDS

Background

Health insurance in Holland began about one hundred years ago with the formation of doctor-sponsored sickness funds. Trade and religious groups later followed the doctors' initiative by setting up their own organizations for pre-paying the cost of medical care. By 1941, about 40% of the population was participating in these voluntary programs.

During the years immediately preceding the German occupation, the Dutch government was trying to develop a satisfactory plan of compulsory insurance to extend similar protection to low income groups. Before an acceptable program could be drafted, however, the Germans forced passage of legislation making medical care insurance obligatory for all those insured for cash sickness benefits under the Sickness Act of 1930.

Cash Disability Insurance

The 1930 Act originally required all employed persons whose annual earnings did not exceed 3750 guilders to be insured against loss of income from non-occupational accident or sickness. In May, 1950 this figure was raised to 4500 guilders. (The Dutch guilder can be considered equivalent in purchasing power to our dollar.) Since the average wage in Holland is roughly 2000 guilders a year, this salary ceiling is high enough to bring the great majority of employed workers within the scope of the program. Self-employers in the same income group may purchase special low cost insurance on a voluntary basis.

Administration

The cash disability program is administered by 34 "semi-public" (non-profit) organizations. Some of these companies had been established prior to the 1930 Act to furnish insurance on a voluntary basis to particular trade groups; others came into existence with the compulsory law. All must be approved by the Minister of Social Affairs and are subject to regulation by the College of Supervision for the Sickness Act, which makes yearly reports to the Minister on the conduct of their affairs. Most

companies are directed by a board composed of representatives of labor and management. Their operating expenses average about 15% of premium.

Benefits

Cash disability benefits are paid in an amount equal to 80% of the daily wage up to 12 guilders, or a maximum of 9.60 guilders. Benefits are payable for a period not exceeding one year; thereafter the insured is entitled to allowances under the Invalidity Act if he is more than two-thirds incapacitated.

In case of pregnancy, employed women receive their full daily wage during at least six weeks before confinement and from six weeks to 12 months after confinement. The wife of an insured man, or an insured woman herself, receives a lump sum of 55 guilders on confinement.

Financing

The cost of the cash disability program is borne by employers almost exclusively. Although they have the legal right to withhold 1% of insured employees' wages to help cover the cost, most employers pay the entire premium themselves. The premium rate established by law amounts to 3% of wages, but companies are allowed to write business at a lower rate provided they maintain adequate reserves and can satisfy the College of Supervision that their financial strength will not be jeopardized by such action.

Since employers have free choice of insurer, efficiently managed companies with low operating expenses can enjoy a competitive advantage based upon price. Officials of the Ministry of Social Affairs were quick to point out that such competition operates to the advantage of the insurance buyer. Their pride in this "unique" feature of their cash disability program is not surprising in view of the fact that competition is practically nonexistent in the insurance plans of other European countries.

Medical Care Insurance - Compulsory

As noted above, the Sickness Insurance Funds Decree of 1941 makes medical care insurance compulsory for all those insured under the Sickness Act of 1930. Protection is automatically extended to wives and to children under 16.

Administration

The 1941 law made existing voluntary sickness funds responsible for furnishing the compulsory coverage subject to the approval of the state. The activities of the 143 approved companies are supervised by the Sick Funds' Council, a board composed of 35 members representing the sickness funds, doctors and hospitals, employers and employees and the Ministry of Social Affairs. Administrative costs run somewhat under 10% of premium (9.7% in 1948).

Benefits

Benefits include: 1) full cost of treatment by general practitioner or specialist; 2) ward care and maintenance in public or private hospitals for a period of six weeks for each illness; 3) ambulance service (except for a token charge); 4) routine dental care, including regular six months prophylaxis; 5) full cost of drugs (provided patients use a pharmacopoeia product rather than its patent medicine equivalent); and 6) part of the cost of special appliances such as trusses and glasses.

The Dutch plan for providing free routine medical care resembles the British panel system with the exception that family doctors receive their per capita fees from the insurance companies rather than from the government. A policyholder and his family register with the doctor of their choice and retain the right to change physician at half-yearly intervals. For each insured person on his panel the doctor receives a yearly fee of five guilders from the company furnishing the coverage. This amount is fixed by agreement between the Royal Dutch Medical Association and the Sick Funds' Council.

Recommendation of the family doctor is a prerequisite to specialist treatment and admission to the hospital, and cases referred for hospitalization are carefully screened by medical control boards to avoid abuse of the service. Insured patients are free to consult any recommended specialist who has agreed to the fee-for-service scale of charges negotiated between the Sick Funds' Council and the specialists. They also have free choice of any public or private hospital which has entered into agreement with the Council to provide ward care and maintenance for insurance patients.

Unlike Sweden and Switzerland, Holland has very few public hospitals, and cost of hospitalization in the private institutions is generally rather high. But most hospitals have cooperated with the Sick Funds' Council by agreeing to make ward care available to insurance patients at reduced rates. Some hospitals

and their affiliated specialists have contracted with the companies to provide all necessary care for a daily charge of 7-8 guilders, including laboratory and specialist fees. Others make separate charges for hospitalization and surgical care, in which case surgical fees are paid in accordance with the fee-for-service schedule negotiated with the specialists.

Financing

The compulsory program is financed entirely by premiums shared equally by employer and employee. Originally 4% in 1941, the premium rate is now 3.6% of the first 3750 guilders of annual earnings.

1. Collection of premiums

In order not to interfere with existing voluntary insurance contracts between individuals and sickness funds, the law provided that employees should retain free choice of insurance carrier. At the same time, it made employers responsible for collecting employee premiums, thus breaking the principal contact between the employee and his insurer. The desire to preserve this contact has led to the development of a complicated and unwieldy system for handling premium collections.

The employer is obliged to deduct employee premiums from wages (either weekly or monthly) and transmit this amount, together with his own contribution, to the state-controlled "Equalization Fund." At the time of such deductions, he must furnish each employee with a receipt of payment known as a "coupon." The employee, in turn, must surrender this coupon to the collector from his own company, who stamps his insurance card entitling him to medical and pharmaceutical benefits. Employers purchase coupons in book form from the post office or local Board of Labor. Since the amounts paid for the books will agree with the amounts deducted from employee wages, the employer transmits the book covers to the Equalization Fund together with the difference between the total amount of premium due (as calculated from his wage lists) and the amount paid for the coupon books.

2. The Equalization Fund

The sickness funds are completely dependent upon the Equalization Fund for the money required to administer the compulsory program. The law originally provided that premiums paid into the Equalization Fund should be distributed among the insurance societies on the basis of number of persons covered. Although

this measure was meant to stimulate the companies to effective control of administrative expenses, it became apparent almost at once that costs varied widely for economic reasons quite beyond their control. Thus, a distribution based on number of insured operated to the advantage of some companies while penalizing others. The Sick Funds' Council is presently seeking a more equitable basis for apportioning receipts of the General Fund. Temporarily, payments are being made to individual companies in the form of loans based on stated costs.

The 3.6% rate has produced a premium volume more than adequate to cover costs of the compulsory program. (For 1948 calendar year, there was a residue of more than 25,000,000 guilders after payment of benefits and administrative expense.) At present, redundant compulsory premiums are being used to subsidize the voluntary program and to support Public Health Service research in preventive medicine.

Attitude of Medical Profession

According to Dr. Wibaut, secretary of the Medical Society, the profession is reasonably satisfied with its status under the compulsory program. And nowhere in Holland did I hear complaints such as those voiced in England over loss of professional prestige, excessive paper work and undue interference from supervisory authorities. Physicians are quite content with the system of remuneration. Since per capita fees based upon a maximum of 3,000 patients are set high enough to afford a comfortable living, family doctors do not have to see more patients than they can treat properly. The approved fee-for-service schedule has also been found satisfactory, and specialists observe it willingly.

Two features of the compulsory law were criticized:

1. It tends to create an artificial separation between medical care and general health maintenance by making medical care insurance a part of the general social insurance scheme.

2. It throws an undue burden on the general practitioner by making him the controlling doctor for use of the specialist, hospital, and pharmaceutical services.

Medical Care Insurance - Voluntary

The 1941 law also authorized companies writing the compulsory insurance to furnish voluntary insurance at reduced rates to self-employed persons with incomes not exceeding 4500 guilders. Although administered by the same institutions, the compulsory and voluntary plans are handled as two distinct programs. Costs of administering the voluntary plan average 12% of premiums.

Those who insure voluntarily pay premiums directly to the sickness fund of their choice. Since they do not have the advantage of employer contributions, they are charged a lower rate than the 3.6% of earnings collected under the compulsory plan. At present, participants in the voluntary program pay eighty cents a week for each family member over 16.

These contributions, however, fail to cover the cost of benefits, which must be equal to those provided under the compulsory system. As a result the voluntary funds are running deficits which are currently offset by contributions from surplus compulsory funds and from the state. These subsidies are granted if examination of a company's operating statement indicates that the voluntary funds have not been mismanaged. Government recognizes that it is virtually impossible for the voluntary program to be self-supporting at the rates charged. Yet it is reluctant to curtail benefits or increase premium rates lest such action discourage voluntary enrollments among lower income groups. For the present, therefore, it is planned to continue the policy of subsidizing the voluntary program.

Individuals whose salaries exceed 4500 guilders yearly are barred from participation in the compulsory or the low-cost voluntary plans, but can purchase insurance from "commercial" (profit-making) companies provided they have no pre-existing disability. Since policies furnished by these companies generally contain a cancellation clause permitting the insurer to terminate coverage at will, the protection they afford is often questionable.

Comment

With 75% of the population now insured, the Dutch compulsory - voluntary program is successfully accomplishing its fundamental purpose of removing the financial barrier to good medical care. At first glance, it may seem to have overlooked that segment of

society which needs the protection most, namely, the unemployed. But actually this group is well taken care of within each community. Private and public welfare agencies have always made free medical care available to the indigent. Recently, however, there has been a growing tendency for the local community to discharge this social responsibility by insuring its unemployed with the sickness funds until such time as they may return to work. Thus the program covers practically everyone but the well-to-do, who can afford to make their own arrangements for medical attention.

Holland is one of the few countries in Western Europe where the rising tide of socialist thinking has been stemmed. Taught by their experiences during the occupation to dread the effects of state control, the Dutch are fearful of social schemes which threaten to increase state intervention in their affairs. So far as their health program is concerned, they believe that government's role should be to strengthen and coordinate the activities of private and public groups in the provision and financing of health services.

CONCLUSION

Except in England, western European programs for financing the cost of medical care have evolved slowly in response to specific social, economic, and political pressures. The wide variety of programs developed through the operation of these forces makes Europe a rich field of investigation for the student of medical care plans. But it is a disappointing field for one primarily interested in observing the role assigned private insurance. For no mere reference to "private" or "semi-public" institutions can sugar-coat the fact that European companies writing health insurance are little more than chosen agents of the state, subsidized by government to administer a public service.

The fact that in Europe private companies are practically inoperative in the field of health insurance is largely due to the inability, or the unwillingness, of such organizations to rise to the challenge presented by a broadening philosophy of social responsibility. Fortunately, the casualty industry in this country is in a better position to preserve its stake in the field of health insurance than were the European sickness societies. Our handling of workmen's compensation has already demonstrated how successfully private insurance can discharge a social obligation. Through work in this field insurance has developed techniques and skills which can help weave a pattern of health insurance more satisfactory than European programs.

Few in this country deny the need for a program designed to put adequate medical care within reach of all. But even should the need be met by private organizations, the demand for government-operated national health insurance would not be completely silenced. Certainly the excellence of Sweden's present system would seem to obviate the necessity for compulsory federal insurance, yet such a program may be brought into existence as part of a larger scheme to transform Sweden into a socialist state. And we only deceive ourselves by believing that we are immune to the contagion of socialist thinking which has crept over Europe. Our problem, therefore, is twofold: not only must we do as much as we can to meet the need for satisfactory methods of financing medical care but we must do it well enough to vitiate the arguments of those who would make provision of medical care the full responsibility of government.

Obviously, there are certain areas of need in which private insurance is not prepared to operate. But the casualty industry is equipped to make a significant contribution to the health of a very large segment of the population - the gainfully employed and their families. Our ability to provide employee groups with on-and-off the job protection against the hazards of accident

and sickness provides an unparalleled opportunity to influence the nation's health through its workers. We have made a sound, if modest, beginning. On the small scale represented by individual employee groups, we have developed medical care plans with the preventive and curative orientation lacking in so many large-scale programs abroad. Within the limits of our resources and abilities, we must increase our efforts to make available to greater numbers of industrial workers the benefits of "in-plant" medical care combined with protection against the heavy costs of illness.

One of the more serious criticisms of voluntary programs is their failure to provide benefits in keeping with actual costs of medical care. Here again we have taken tentative steps in the right direction. Under the Tennessee Plan, the Wisconsin Plan, and a few others we can now offer low income groups complete protection against the cost of stated surgical procedures. We should continue to work with the doctors for agreements which will permit us to offer more contracts covering the full cost of essential services, or at least a substantial percentage of entire cost. We might also try to negotiate hospitalization agreements which would help us narrow the gap between benefits and costs. The medical services, as well as the insurance industry, should be willing to make some concessions to preserve their stake in the voluntary program.

According to Senator Saltonstall, the threat of national health insurance has been deferred for another two years. If the senator is right, we have a period of grace in which to perfect our own solution to the problem. We cannot capitalize upon this opportunity simply by holding the line against unsound legislation. We must take the offensive and make good our claim that private enterprise has the resources and the experience to finance, underwrite, and service a satisfactory solution to the need for health insurance.

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SUMMARY OF PROPOSED CASH DISABILITY BENEFITS IN SWEDEN

The scale of daily cash disability payments (in Swedish crowns) proposed by the compulsory resolution is as follows:

Basic Compensation

3.50 for all persons between 18 and 67 except married women without gainful employment and persons receiving a pension.

1.50 for married women without gainful employment.

2.00 for pensioners and children between 16 and 18.

Extra Allowances

2.00 for married beneficiaries who contribute to the support of their family.

0.50 for each child.

1.00 for married women without gainful employment if they have children under 10; this is a flat rate, regardless of number of children.

This schedule can be increased upon payment of additional premiums: the 3.50 basic compensation can go as high as 8.00 a day, the 2.00 basic compensation up to 6.50.

"FROSTBITE"

ERRATA (Important).

Page 5 Third line from bottom, delete "not." Read "though the warming process does extend beyond. . ."

Page 23 First line from bottom of page. For "including fingers" read "including fingers and toes".

Page 34 Third last line of second paragraph read "patients complain of loss of feeling, general debility. . ."

Page 50 Ninth line of third paragraph. For "In the second case" read "In the second exposure. . ."

Page 58 Last line on page. Read "Pasternak's Symptom ++, Laseque's Sign --."

Page 72 Third line of fourth paragraph. For "initial" read "incipient".

Page 76 Last line of second paragraph. Delete the word "period".

Page 76 Second line on page. For "think" read "thick".

Page 102 Fourth line of first paragraph beginning on page. Read "who point out that micro-organisms. . ."

MINOR ERRATA.

Page 29 Para 6, line 4. Read "probable" for "probably".

Page 39 Para 2, line 3. Read "leucocytes" for "leucytes".

Page 56 Last paragraph line 4. Read "MARGOULIES"; line 6, read "And" for "An".

Page 57 Para 4, line 6. Read "kind" for "king".

Page 95 Para 2, line 2. Read "by way of the trachea"; line 16, for "the remainder" read "the others".

Page 101 Para 1, line 1. For "pleuritis" read "pleurisy".

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FROSTBITE

TRANSLATIONS FROM THE RUSSIAN
OF A COLLECTION OF SIXTEEN PAPERS
PUBLISHED BETWEEN 1939 & 1944

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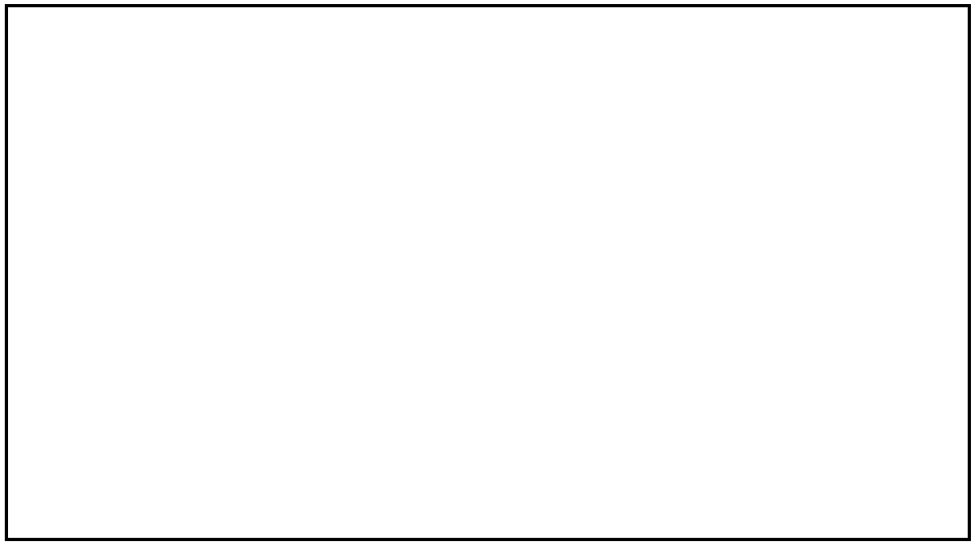

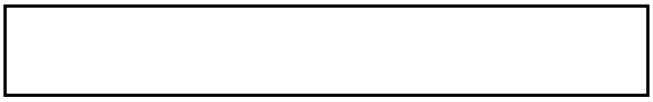

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F R O S T B I T E

Translations from the Russian of a collection of sixteen papers published between 1939 & 1944.

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CONTENTS

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FOREWORD TO TRANSLATIONS

Frostbite as a serious handicap is rare in peacetime military operations. In the past, the subject has many times come briefly into prominence in wartime but interest has soon waned with the return of peace. History clearly shows the bitter price paid by armies unprepared to operate in the cold and unprepared to deal with cold casualties. In winter warfare, exposure casualties have never been inconsiderable (see page 3); in sub-arctic warfare, frostbite may account for more casualties and loss of effective manpower than all injuries directly the result of enemy action (see SMIRNOV and ORLOV, p.69).

There are two problems: prophylaxis and therapy. Neither can be neglected. We must avoid the tendency to assume that once our prophylactic doctrine has been perfected we are finished with the matter. Prophylaxis cannot be infallible.

In winter warfare we cannot expect to be as efficient as in peacetime; often we cannot accurately plan ahead; often time and the pressure of events work against us.

In winter warfare we cannot always count on the provision of adequate shelter, nor on an infallible service of supply. Clothing which is normally adequate fails to give protection when wounded men and men unconscious from blast are exposed to the cold; the same is true when men are pinned down by enemy fire in exposed or damp positions or in cramped attitudes.

We do not have the same ability as in peacetime to evacuate men at will when there is evidence of frostbite or severe chilling. Evacuation itself may be effective in producing casualties, by keeping men, both wounded and unwounded, exposed to the weather and away from warmth and shelter.

These lessons the Soviet armies learned during the war, particularly from the sequelae of the Finnish campaign. They learned them the hard way. It is hoped that this miscellany of Russian articles on frostbite will have some value for us; it may help to keep the historic lessons in view and in correct perspective.

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The articles [redacted] cover the period 1939-1944, the formative period of the modern Soviet frostbite doctrine. Although the coverage is not complete, it may be taken as adequately representative; it will give a concrete picture of treatments employed and of some attempts to follow up theoretical leads. It is worth remarking that some of the fundamentals in the treatment of frostbite are still unsettled problems.

The articles are not printed here in chronological order; they are arranged roughly by authors or groups of authors or schools.

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Remarks

Square brackets [ ] are used to enclose explanatory words interpolated by the translator.

The transcription of names is such as to indicate accurately the original Russian spelling. The digraph CS is to be pronounced as a closely linked TS (not separated in pronunciation).

Erratum

Page 56: for MARCOULIS read MARCOULIES.

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NEW FINDINGS RE THE PATHOLOGY AND CLINICAL CONCEPT OF FROSTBITE

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Frostbite on a mass scale has been the concomitant of all past wars. It is sufficient to point out that in the 1914-1918 War frostbite cases accounted for one-seventh of all French soldiers evacuated from the lines (CHEVALIER), that on the German side the number of cold-exposure cases amounted to 2% of all sick and wounded (SCHADE), and that in the 1931 Japanese intervention in Manchuria 100% of their troops, no less, suffered in some degree or other from frostbite (TAKATSU). To quote figures for frostbite cases in the last imperialist war, we note that in the French forces there was an average of 30,000 per year (MIGNON), in the Italian forces, 12,000 (BONOMO); the average number of frostbite cases in the German forces was not published, but one may get an idea of it from the fact that during the first years of the war German authors reported on 1,928 cases of frostbite, plus the fact that in the German [military] hospitals the post of "specialist in frostbite treatment" was created.

The facts speak for themselves. It is more than evident that frostbite is a very present problem.

One must however note that the amount of attention devoted to the problem in the literature is not at all in proportion to its urgent importance. In the literature one may see that interest in frostbite rises during a war and slowly subsides in peace-time, evidently because frostbite is comparatively rare in peace time, as statistics show. As for the theoretical side of the question, it used to be thought that the last word had been said on the subject. The theses worked out during the first period of laboratory study of frostbite have been simply accepted and incorporated in all present-day text-books, both Soviet and foreign. Nevertheless, a number of researches lately carried out by ourselves have shaken the generally accepted concept of frostbite pathogenesis, changed our ideas on the nature of frostbite, and thereby led us by logical steps to the necessity of reviewing the basic principles of treating this type of thermic injury.

The fundamental methodological error of the older research workers was that they identified frostbite with actual freezing [formation of ice]. It

has long been known that frostbite is possible at circumambient temperatures higher than 0°C, a fact which renders the literal freezing of the tissues impossible. Furthermore trench-foot, the most typical form of frostbite in war time, was seen to occur on damp days, not on very cold days; it was infrequent in freezing weather. We have shown by experiment that death from hypothermia occurs long before any actual freezing [ice formation] takes place in the tissues of a warm-blooded creature; it is only a corpse when it does freeze.

In the technique of experimental cooling of animals, we introduced the use of cold-chambers for general and local action; also the use of the electrothermal pyrometer for temperature measurement, a device which may be employed to measure not only the temperature of the surroundings but the temperature of the tissues too. The correctness of our experimental procedure becomes evident as soon as one considers the fact that in all previous researches frostbite was induced by actually freezing the tissue-area in question.* For this purpose the skin was sprayed with ether, ethyl chloride or methyl chloride, packed with carbon dioxide snow, or some similar method was used to bring about freezing of the tissues. The defects of such procedure may be summed up as follows:

(1) In the real world in which a man lives, cold acts on his whole organism or on his limbs, while in the old experimental technique it was acting only on a narrowly delimited area;

(2) The causative agent in the overwhelming majority of real-life cases is cold air, while in the old experiments the causative agent was a cold liquid;

(3) In real-life frostbite the period during which cold is acting is measured in hours, while in the old experiments this action was measured in minutes or seconds;

(4) In the old experiments the tissue temperature was not measured; hence there existed no clear notion of the temperature regulation within the tissues.

Once the cold-chamber and the electrothermal pyrometer were introduced into our technique, we were in a position to establish immediately the following facts:---

(1) When the skin is sprayed with ethyl chloride, the tissue-temperature drops to 17 - 22°C in thirty seconds to one minute, while if a rabbit is put in the cold-chamber at -40°C, even a four-hour stay is not enough to get the temperature of its ears below 0°C; usually the temperature after this treatment is +12 or +14°C.

(2) As a rule death of the animal takes place while the temperature is still +16 or +18°C. Thus by the use of the pyrometer and cold-chamber it was established that in cooling a warm-blooded animal it is impossible, without completely upsetting its general condition, to reduce the temperature of the tissues to the point where they actually freeze.

* As this sentence shows, ARYEV does not deny the possibility of locally freezing the tissue by laboratory methods. When he asserts that actual freezing of the tissues is impossible, he must be understood to imply "by the action of cold under natural conditions," a qualification which he does not make at all clear. (Tr.).

Numerous observations were made which cleared up a number of facts relative to the pathogenesis of frostbite. On the basis of these observations the following conclusion has been drawn: frostbite occurs as a result of the protracted action of low tissue-temperatures, which temperatures however in the overwhelming majority of cases do not reach the point of actual freezing. If actual freezing is possible at all, it is of insignificant extent and involves the extreme peripheral areas of the body. The decisive factor is the period of time during which the low tissue-temperatures are acting. If very severe cold-action is prolonged for a considerable period, then under these conditions it is not frostbite which is characteristic, but death from cold, because conditions capable of causing the actual freezing of an entire limb are likewise the right conditions for causing a fatal hypothermia. Indirect confirmation of this may furthermore be seen in the fact that cases of frostbite of the limbs higher than the ankle and wrist joints are a statistical non-entity. It may be considered that in a living man actual freezing of the tissues is something which practically speaking does not occur. Thus when we remember that the present day concept of the pathological anatomy of frostbitten limbs is built almost exclusively on the old experimental work, we may properly conclude that at present we have no real knowledge of the pathological anatomy of frostbite. The establishment of a correct concept of frostbite morphology is our task for the immediate future.

An example or two will suffice to show how the application of the new technique to the testing of established theses demonstrates the truth of what we have been saying.

For instance, we find copied from one text book to the next the thesis that hemolysis takes place in frostbite and furthermore in hypothermia. In our work (jointly with N.A.AESBERG) we have shown that in frostbite the fragility of the erythrocytes is not increased and the changes which occur in the blood are characteristic only of venous stasis. Exactly the same thing was shown by V.N.SHEINIS of our clinic to be true in the case of hypothermia. This is in fact quite understandable, because the blood will stand low temperatures very well, down to the freezing point, a fact demonstrated by large scale experimental work in connection with preserving blood on ice. However, it is scarcely necessary for us to envisage freezing of blood in the tissues, because it is impossible to freeze the tissues of a living animal.

This experimental work among other things has furnished us with a basis for clearing up a number of questions connected with the transfusion of refrigerated blood. Direct pyrometer measurement has shown, first of all, that is impossible to get blood into the recipient of a transfusion if the temperature of that blood considerably exceeds the temperature of the room where the transfusion is being given. Hence the introduction of blood at body temperature (37°C) is a task impossible to perform with our present-day transfusion techniques. In the second place it has become clear that refrigerated blood is speedily warmed up in the veins, though the warming process does not extend beyond the confines of any small section of the circulatory system. Thirdly it has become clear that animals have a high tolerance for transfusions of cold blood. These findings have permitted us to draw a

conclusion of particular importance, namely that from the point of view of the temperature behavior of transfused blood the basic danger is not in refrigerating it but in overheating it.

To return to questions directly connected with frostbite, I may give certain further examples of the inadequacy of the traditional views on the nature of this involvement.

In studies of the healing of wounds under conditions when they were exposed to the action of cold atmospheric air, we found ourselves confronted with a morphological picture which was diametrically opposite to that described in the literature. The reason for this was that in the case of our animals we used cold-chambers to subject their wounds to the action of cold, while previous research workers were actually freezing the wounds of their test animals. Quite recently SALGANIK, studying wound-healing in humans under Spitzbergen conditions, obtained results on the whole similar to our experimental observations; thus our findings have received clinical confirmation.

We may also point to one very widely held view, which we regularly encounter even in the latest monographs and manuals (STICKER, LECHSER). I am speaking of the alleged brittleness of frostbitten extremities. Experimental tests have shown that cooled extremities preserve their elasticity, and frozen digits or ears cannot be broken even with a hammer. Thus the stories of ears and noses breaking off in the cold are to be relegated to the domain of fairy tales. What an astonishing strength tradition has! We made a careful search of the literature to find any concretely described facts on the frangibility of frostbitten extremities, but we found none. We cannot doubt that such cases, if they had occurred, would have been described on the basis of direct observation. Hence there is nothing else to do but suppose that this current notion is based on the foregone concept that frostbite is actual freezing.

The practical significance of our researches on the "brittleness" of frostbitten extremities resides in the fact that the old notions must inevitably militate against the use of massage in frostbite and of artificial respiration in cold-exposure cases. Yet the importance of both these techniques in the treatment of frostbite and exposure would be difficult to overestimate, and it is a good thing that the most recent manual of field surgery, that of BORKHARD and SHMIDEN, recommends artificial respiration in exposure cases and discounts the current notion of brittleness of the extremities in these cases.

We deny that actual freezing of the tissues is possible in a living man. This is the number-one point in our concept of frostbite pathogenesis. We shall amplify the statement by considering five cases of what may be called the <u>biological peculiarities of the action of cold</u> on the living organism.

The first biological peculiarity of the action of low temperatures is the fact that the resistance of the organism to cold and the complexity of its structure are in inverse

ratio. The more complexly built the organism is, the greater its sensitivity to the effects of low temperatures; thus the single-celled protozoa, for which the concepts of "frostbite" and "freezing" become indistinguishable, indistinguishable not only in a relative sense but absolutely, have a high endurance for cold. The organism of one of the higher forms of life, when separated into its component parts, becomes capable of standing temperatures which would inevitably cause the organism as a single complex to perish. Many examples could be adduced in support of this statement.

The second biological peculiarity of the action of cold is the immeasurably greater resistance of tissues, cells, and living protein in general to low temperatures, as compared with their resistance to high temperatures. It is sufficient to point out that whereas a definite critical point (+50, +52°C) exists for protein acted upon by high temperatures, a point at which it coagulates, in the case of low temperatures no such critical point exists. It is therefore the time-factor which plays the important rôle, indeed an immensely important rôle, in the pathogenesis of frostbite.

The third biological peculiarity of the action of low temperatures on living tissues is the slowing down of chemical and biological processes in the cooled area. This effect is such that we can account for it perfectly in terms of van 't Hoff's law. Not only is it the basis on which the phenomenon of anabiosis takes place, but it is the factor which affords us such great possibilities of improving results in the treatment of frostbite and exposure cases.

The fourth biological peculiarity of the action of cold on living tissues is the "latent" character of frostbite injury. Our histological researches have shown that in tissues taken before thawing out, the structure is not changed; changes appear only some time after warming and are inflammatory, degenerative and necrotic in nature. However, the longer cold acts on the tissues, the greater the break-down which is brought about after warming. Thus the tissue-changes evoked by low temperatures are not detectable by present-day histological techniques at the time they are in progress.

The fifth and last "biological peculiarity" is the high degree of reversibility of the tissue-processes occurring in frostbite. This peculiarity is a consequence of the preceding four, and is singled out by us on account of its practical importance. Our observations in the clinic have repeatedly shown us that the frostbite site has a tendency to decrease in area and that initial symptoms of menacing appearance very often disappear. Many times in our practical work it has happened that frostbite cases initially labelled "third degree" took the clinical course of second or first degree frostbite.

To understand the pathogenesis of frostbite, it is essential to recognize these five peculiarities which I have enumerated. On the other hand we must also give consideration to the state of the blood vessels in frostbite (thrombosis, endarteritis), to disturbances in the colloidal structure, to autoagglutination, and to neurogenic influences in order to form an idea of the whole picture as it most probably does develop. Those who are interested in these aspects of the subject will find data in our monograph "Frostbite", Chapter III (Medgiz, 1938).

Such are the general outlines of the new concept of frostbite pathology. The radical changes which have taken place in that concept have entailed certain changes in the clinical concept of frostbite. To start with, our present terminology exists only by virtue of tradition and does not reflect the real genesis of the process; our very word "frostbite" gives a false reality to the idea of a freezing of the tissues.* It would be more correct to speak of cold-injury, local and general. However, this expression would be awkward and people at large are more at home with generally understood terms; hence the introduction of a new terminology would hardly be a good move.

I should however mention that in a number of cases the true genesis of a cold-injury does from a rather elementary point of view find correct expression in the terminology. Thus we have in general use the terms "trench foot" and "dampness gangrene",** which correctly reflect cold-injuries typical of war-time. In many other cases the terminology is likely to reflect the importance of certain so-called "promoting factors" in the genesis of a particular form of frostbite, (e.g. "compression gangrene", "mycotic gangrene" etc.). What is involved is that the incidence of frostbite depends not so much on the surrounding temperature as on the temperature of the tissues. As long as a man, through his natural and artificial temperature-regulating resources, is able to maintain the proper temperature in his tissues, frostbite does not occur. This is proved by the fact that large numbers of people winter in the Soviet Arctic and numerous scientific expeditions have survived there without the slightest impairment of bodily health. The proper conditions for the incidence of frostbite take shape just as soon as factors appear which permit the external temperature to influence the temperature of the tissues. The influence of some of these factors is very great indeed. In first place in this connection we must note the effects of damp. The importance of damp really lies in the fact that it simultaneously neutralizes a man's artificial defences against cold and considerably reduces his natural defences. It means formation of vapor from damp clothing; it means increased thermal conduction through the /surface of the/ tissues, which in a dry state conduct extraordinarily little heat. The following example from our clinical experience is very typical:---

Case #1. Patient T, age 38 years. Got drunk and spent the night of February 17-18 outdoors, atmospheric temperature -9°C. During the night he had an involuntary passage of urine in his

* The Russian word otmorozheniye (frostbite) means literally "freezing off". (Tr.).

** "Nassengangrän". See page 35 (Tr.).

sleep, the urine running down into his left boot. The result was a serious case of frostbite of all the toes of the left foot. March 27, exarticulation of all the toes at the metatarso-phalangeal joints, without anaesthesia. Right foot, ears and nose showed no trace of injury.

In individual cases the significance of other promoting factors or combinations thereof may appear in a very evident manner; we should however note that in all cases the second most important factor is pressure on the extremities (tight footwear).

As regards frostbite localization, under wartime conditions the overwhelming majority of cases involves the toes or the foot itself (according to KIRSCHNER and ZUCKERKANDL, 96% of cases; according to BONOMO 99%), either alone or in conjunction with other parts of the body. The fingers stand in second place. Cases of frostbite of other parts of the body such as the ears or the nose, though frequently encountered in peace-time, are rare under war conditions. The reason is that frostbite of the nose or ears is rarely of a serious character; therefore such patients are not evacuated and escape our count. The reason for the non-existence of serious frostbite of the nose or ears seems to be that in these cases the involvement is of an incipient nature: conditions capable of producing any significant degree of freezing in the ears and nose are just the conditions for causing a fatal hypothermia.

In the feet it is mostly the great toe which is affected, it being the worst situated as regards circulation. In the hands it is on the contrary the thumb which suffers less than the other digits, because the patient usually keeps his thumb inside his fist. The fingers are hardest hit in ski-troops and drivers, that is, in personnel who must hold hard objects tightly in their hands for some time at a stretch.

Other parts of the body are quite rarely frostbitten. We may note cases of frostbite of the penis and scrotum, usually incurred in drunken sleep in cold weather. As a rare case, frostbite of the labia has been reported in a mother who was forced to give birth in the snow. The protracted application of an ice-bag to the body may cause third degree frostbite of the skin.

The differential diagnosis of frostbite presents few complications, though cases have occurred to "trench foot" (usually in its initial forms) complicated by rheumatism, edemata of the limbs of cardiac or nephritic origin, and morphological* ulcers. In such cases it is very important to study the neurological picture, because sensory disturbances are characteristic even of the very earliest stages of "trench foot."

For early diagnostic purposes and as a timely check on the development of osteomyelitis, one should in third degree frostbite** have recourse to roentgenography. By approximately the end of the third week from the time

* If this word is not a misprint, it seems that the sense is "ulcers of known morphology, i.e. of recognizably non-frostbite origin." (Tr.).

** Note that in this article ARYEV is apparently using a three-degree classification, not the four-degree classification which was developed later. Thus the third degree frostbite here mentioned is that involving the bone. (Tr.).

of origin the X-ray will reveal osteoporosis not only in the affected area of the soft tissues but also in areas considerably more proximal. The nature of this osteoporosis cannot yet be regarded as fully explained, but there is no doubt that it is encountered in the majority of frostbite cases, not only those of the third degree but those of the second degree too, and it continues for a long time. This phenomenon has a good deal in common with "chilblaining"* (affected areas general rather than local; persistence; some connection with previous frostbite) and seems to reflect trophic disturbances which are characteristic of frostbitten areas.

Complications in frostbite we divide into four basic groups:---

(1) Infective complications of acute suppurative type. To this category belong phlegmons,** osteomyelitis, arthritis, general infection, also tetanus and anaerobic gangrene. The latter two complications in frostbite result in almost 100% mortality.

(2) Acute infective complications developing without suppuration ... neuritis, arthritis.

(3) Complications of the nature of metabolic and trophic disturbances. Here we should mention disturbances in the pigmentation (melanosis), disturbances in the salt metabolism (local calcifications), trophic ulcers. We have seen /two cases of/ ulcers developing as a result of frostbite which had occurred four years and fifteen years previously. As a rule such ulcers are exacerbated when cold weather sets in. Very occasionally one observes chronic swelling and thickening of the tissues on ground prepared by a chronic recurrent frostbite.

(4) Various complications not included in the above three groups. The following have been described: emboli of the brain, various endocrine disturbances, onychogryphosis, subungual keratomata.

An article of this length does not permit me to dwell in more detail on the clinical handling of frostbite from the point of view of the most recent concepts. For the same reason it is not possible to dwell on the problem of frostbite prophylaxis, which in the case of this ailment is a matter of exceptionally great significance. I must however try to cast a little light on recent findings re first aid in frostbite, this being a matter of fundamental importance.

It has been a widespread and generally accepted rule-of-thumb that frostbitten limbs should be warmed up slowly and gradually. In every text book you may read that rapid rewarming of frostbitten extremities causes gangrene in them. For some time we have been trying to discover the sources of this

* See Translator's note page 85 (Tr.).

** Phlegmons ... defined as suppurative inflammation of the areolar tissue ... cellulitis. (Tr.).

assertion and have by now come to the following conclusions:---

(1) The rule of slow and gradual rewarming of frostbitten extremities is based on the foregone concept of frostbite as a state of actual freezing: living tissues are viewed on the analogy of the thermal behavior of lifeless substances, particularly metals. In part it is based on folk traditions.

(2) In the literature we failed to find any trustworthy descriptions of concrete cases of frostbite treatment in which a departure from the accepted rule-of-thumb produced adverse results.

(3) It is on the whole impossible to warm a frostbitten member rapidly.

(4) The more rapidly we warm a frostbitten extremity, the less necrotic and degenerative symptoms we find in the tissues after warming.

The first of the above theses may be demonstrated by the fact that authors, in developing the theoretical side of the old first-aid rules, either allude directly to the necessity of "thawing out" the frostbitten extremity or proceed to theorize on the basis of a crystallization of the tissue fluids (formation of ice). The instances cited are usually references to adverse results obtained in the rapid thawing out of frozen meat or fruit. It follows (without speaking at all of the impossibility of using in this connection examples drawn from the culinary field) that the arguments could not apply to that extensive category of frostbite in which there is no question whatever of an actual freezing of the tissues ("trench foot"). Furthermore when we "rapidly" warm (in experiments) tissues which are indeed frozen solid, we do NOT produce those grisly consequences of which the text-books speak.

The second thesis may be demonstrated by the fact that where isolated cases of gangrene in frostbitten limbs are adduced in the literature, they are such as to be quite unacceptable as proof that the gangrene was really a consequence of "rapid re-warming."

The third thesis rests on the fact that, since the skin and the cellular tissue under the skin are very poor conductors, the penetration of heat from outside to within takes place extremely slowly; this we have demonstrated by direct pyrometric measurements. Thus even the most "rapid" re-warming in practice turns out to be very slow.

Finally, the fourth and last thesis is demonstrated by many experiments which we have carried out. Using warm moist compresses to warm up even a solidly frozen ear, limb or muscle of an animal, the more rapidly we did so the less signs there were of inflammation and necrosis. The same thing was recently shown by V.SHEINIS to be true of hypothermic animals. In numerous tests, tests which were the logical development of our ideas and experiments, he demonstrated that the most thorough-going means of restoring an animal which had succumbed to hyperthermia is a speedy and intensive re-warming. The

emergent fact is that in the case of frostbitten limbs or of persons suffering from exposure to cold, it is senseless to put them in icy baths, pack them in snow or bathe them with icy water, as recommended in the text books. So long as the patient is alive, his body temperature cannot be lower than +20°C nor the temperature of his limbs, it seems, lower than +10°C. Such being the case, baths of a lower temperature will not warm the tissues but on the contrary will cool them; this is all the more evident if we take into consideration the fact that wetting the integuments will heighten the thermal conductivity and increase the propagation of the low temperature into the depth of the tissues. If we bear in mind the enormous significance of the time-factor in the pathogenesis of frostbite, it becomes quite clear what these researches do mean in the field of first aid.

For humans too we now have at our disposal some isolated observations on the rapid warming of frostbitten extremities. The results obtained are encouraging and never in any case indicate an adverse influence on the subsequent course of the involvement. To be sure, the full-scale clinical testing of our experimental results still lies ahead of us, a fact which we must stress; nevertheless logic and the facts are on our side. And we should hasten to explain that what we mean by "rapid" warming is the combined use of hot baths and massage. Particularly do we emphasize that the temperature of the baths must not be higher than body temperature, that is, not higher than 37°C, because overheating of the tissues is the last thing we want.

As regards the continuing* treatment of frostbitten extremities, this reduces to two fundamental measures: (1) maintaining circulation in the affected area and (2) keeping infection from getting into the tissues. In practice this is effected by a combination of ordinary conservative surgical procedures. We must particularly stress the conservative side of treatment, as I think follows from the particular nature of frostbite pathogenesis. It is to be remembered that for amputation and exarticulation specific indications are required, and that primary amputation of frostbite is a mistake.

This survey of the problem has had as its purpose to acquaint readers who are not surgeons with the present state of the frostbite problem. To do so, it has proved necessary to deal with certain theoretical questions. However in frostbite it is easy to convince oneself of the indissoluble bond between modern clinical practice and theory. In demonstrating the incorrectness of the old concepts of frostbite, we have come by logical steps to the statement of a whole series of new facts and to a new concept of frostbite therapy.

* Continuing treatment: Treatment subsequent to first aid. (Tr.).

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MODERN FINDINGS ON FROSTBITE

By Prof. S.S. GIRGOLAV

Since 1934, I have had the opportunity of carrying out a number of researches on the effect of cold on the organisms of animals and humans.

Originally our efforts were confined to experimental work, but later, during the war with the White Finns, we added clinical observation work, which was still later continued during the autum-winter-spring period of the first year of the Great Fatherland War.

This work began with the researches of Dr. ARYEV, which uncovered a number of new facts; these facts clearly contradicted accepted views and prompted me to immerse myself in the problems of cryopathology. Then came the work of SHEINIS, MOLDAVANOV, GAMOV, KAZ and in general the further researches of ARYEV and his co-workers.

The first results of the researches had already spurred me to broaden our work and to interest a number of other research workers in checking it. The People's Commissar for Health, G.A. MITEREV, for purposes of centralizing the work on this subject which was so important from the defence view-point, thought it necessary to form a Cold Bureau (Cryoburo) in Leningrad with myself as Chairman. This Bureau worked systematically up to the time of the evacuation of all its personnel from that city.

New data of a highly important and interesting nature were obtained and laid before the sessions of the Bureau by Prof. FRENKEL and his co-workers, by Prof. S.T. PAVLOV, by the co-workers of PROF. BYKOV, by my own associates and by certain other research workers. Part of this work has already appeared in print; accounts of other work which was carried out in other cities of the Union will appear later, either in reports or in the pages of periodicals.

The purpose of the present article is to formulate certain propositions which I can already state with great confidence, as they have been confirmed not only in experiments alone but in pathological work and clinical practice, that is, in work with human subjects.

The first and most fundamental of these propositions is that the actual destruction of the tissue elements of the human body does not take place directly from the effect of cold, but secondarily. This does not mean that cold is not capable of causing gangrene and of destroying tissues, but it means that in actuality, at the temperatures met with on our earth, nothing of the kind is observed or hardly ever observed. This statement is all the more justifiable in view of the fact that the effects of cold manifest themselves in direct proportion to the time of exposure, the reason for this being mainly the low thermal conductivity of the tissues of the human body. As is well known, the action of cold over a short period of time, when used for purposes of anaesthesia, does no damage. Thus in exposure

to cold the time-factor plays a decisive role. I further note that it is precisely this factor which explains why frostbite takes on so much importance in war-time. The reasons are quite understandable and there is no need to dwell on them.

The cause of tissue-death is first of all the embarrassment and then the suppression of the blood circulation. It has been established that at a body-temperature of 20°C an experimental animal will succumb, in tissues at 18°C the blood circulation is diminished by half, and at 10° or 11°C it stops.

Thus it is evident that in exposure to cold, not only the death of the whole organism but the death of the individual tissue may take place long before there is any freezing thereof. Of course, different tissues are capable of surviving for different lengths of time in the absence of blood circulation. It is a generally known fact that the extremities will stand a 2-2½ hour suppression of circulation, with a tourniquet applied.

It follows that all theories of frostbite based on the assumption of water freezing in the cells are meaningless, since there is no necessity of any such thing as a freezing of the water in the cells for frostbite to manifest itself. According to the hypothesis which I previously advanced, and which since has been supported by the picture revealed under the microscope, what we are dealing with is nests of cells or individual cells in a state of necrosis, dotted here and there throughout the tissues, this even when there is no necrosis discoverable. That is, we have a <u>disseminate necrosis</u>, which is characteristic of the action of cold on the tissues. It is clear that if we have a necrosis of a number of the elemental units or groups thereof, then we have just that many foci of degeneration, dispersed in the form of nests and in the most wide-spread fashion in a great diversity of tissues, particularly in the vessels and nerves.

The importance of the time-factor has compelled us to re-examine the generally accepted idea of the necessity of <u>slow</u> re-warming of the patient or of the frostbitten members of his body, beginning with immersion in <u>icy water</u>.

In the light of the above findings, the use of <u>icy water</u> appeared to us to be completely senseless, since it not only did not warm but on the contrary cooled the body or a portion of it; moreover the duration of the effective exposure to cold was lengthened; all this could not do anything else but aggravate the process and could in no sense be called "first aid".

A whole series of researches on various animals has shown beyond any possible doubt that the quicker we get the chilled animal or the chilled parts of its body (ears, extremities) warmed up, the better the results. From numerous experiments of this kind conducted by various research workers, it became very evident that it is the speediest possible warming up which is most effective, both of the whole body and of the frostbitten parts of the organism. At the same time all possible measures must be taken to restore the blood circulation. However, this restoration is feasible only if the temperature of the tissues is first raised at least to 20° - 25°C. At a temperature of 10°C there is no use in working on the circulation, because there is no possibility of improving it.

It would be difficult to over-estimate the significance of these factors, because simultaneously with the breakdown of circulation there is also a breakdown of the tissue nutrition, tissue metabolism, etc. We have felt justified in initiating a number of experiments in this connection, which even now cannot by any means be considered as completed.

Along with the blood-vessels, involvements of the nervous system were also noticed; the efforts of N.N.BURDENKO and his students have been dedicated to this aspect of the matter. The work led to a practical suggestion: namely the early blocking of the sympathetic nervous system for the purpose of improving the state of blood circulation.

So that I shall not have to return again to the fact that speedy warming-up is the best expedient, I shall merely note that three dissertations (ARYEV, SHEINIS and MOLDAVANOV) and a number of works from other clinics and laboratories have been in large measure devoted to this question. The following fact should be mentioned in this connection, a fact which clearly reveals itself in re-warming experiments on animals which have been exposed to cold: over quite an extended period of time, the animal loses its temperature-regulating ability, and takes on the temperature of whatever medium is used for warming it (air, water).

Hence, if the temperature of the medium is higher than 37° - 38°C., then the final result is over-heating. It is possible that in just this fact we have the explanation of the traditional fear of speeded-up warming, because the most careful search of the literature fails to reveal any reliable facts to prove the harmfulness of quick warming in itself.

At first we were exceedingly careful in carrying the results of our experiments over to human beings, but experience in the war with the White Finns and more particularly in the Great Fatherland War (ARYEV and his co-workers) has shown that our formulation of the case is correct for humans too.

A propos of this important question I may point out one more comparatively minor detail which by force of tradition has been repeated from one textbook to the next, but which has shown itself to be untrue. This is the abnormal brittleness which is alleged to occur in frostbitten members of the body, nose, ears, fingers. So far no one has ever observed this brittleness of the members, and we may point to the large number of experiments which we have carried out on cadavers and on various animals, with no success whatever in detecting such brittleness. We could dash a frozen frog against the floor with all our strength and perhaps succeed in breaking its toes.

From the study of the effect of cold on human organism, we find that the most important means of prophylaxis are good warm clothing which does not restrict the circulation, warm dry foot-wear, food rich in fats and, still more important, in carbohydrates, and so forth. It is scarcely possible to ascribe great significance to ointments as alleged protection against cold, particularily those containing substances to induce hyperemia. A number of tests with various substances, carried out for the most part with militia personnel in severe cold weather, ended without exception in negative results. The use of substances inducing hyperemia might be justified if there was to be only a single short exposure, a case which never arises under war conditions. The best protection is the healthy skin of a well nourished (with hot food), warmly clothed, unfatigued, healthy and properly trained man, and all prophylactic measures should be oriented in this direction. A comparison of our military personnel with the Fascist cannon-fodder in the winter of 1941-42 is a shining proof of this.

In keeping with the purpose of this article I shall deal only with certain angles of frostbite treatment, which are accepted as basic principles in the work of those associated with my clinic, but first of all it is necessary to dwell a little on the matter of classification. The generally employed three-degree classification of frostbite cases does not call for any objections from the

theoretical point of view, but from the practical side, particularly when we consider the necessities of war-time documentation of cases, it would be more useful to divide frostbite cases into four degrees, on the following basis. In practice, the overwhelming majority of wartime frostbite cases involve the extremities, the digits suffering most frequently of all. If necrosis develops in the digits then it either involves the integuments, in which case the digit will not be lost, or it involves the deeper tissue, in some cases the bone; then amputation is inevitable. If the latter are classed as fourth degree, then this enables us to keep track of the more serious cases which end in amputation.

Clinically, as is well known, the pathological process manifests itself from the time of re-warming, and therefore the clinical follow-up may easily be split into two phases, the prereactive phase and the phase of inflammatory reaction.

The treatment of first-degree frostbite does not demand any special consideration; whatever the methods used the result is the same, namely recovery. In second-degree frostbite we at first sight concentrate on removing the blisters. It is difficult to determine the degree of the frostbite during the first few days, and studying the base of the blister may considerably lighten the task of diagnosis. Danger of infection practically ceases to exist when drying-out treatment is employed, particularly when physiotherapeutic means are used and when the surrounding skin is carefully treated with alcohol.

The greatest danger threatens the patient when there are necroses. The attitude of surgeons towards necrotic areas of frostbite origin has always been determined by the older views on the subject and consequently is strictly conservative, in contrast with their attitude toward any accessible necrotic areas of other origin. The watchword has always been DRY OUT the necrotic area completely, wait for sloughing and epithelialization; then only proceed to the final amputation. Who does not remember those frostbite patients undergoing exhausting months of treatment in hospitals?

We categorically deny that there is any use in this attitude toward the necrotic area. If one makes an incision within the boundaries of the necrotic area, which is practicable without anaesthesia and without blood flowing, then there immediately issues a large quantity of fluid, which would otherwise have to be slowly evaporated or dried out. Yet as is well known, within a few days after frostbite a hard scab is formed which is a strong hindrance to drying out, while dispersed foci of decomposition are formed inside it, threatening infection. Instead of waiting, we propose that as soon as the boundaries of the necrosis are manifest, that is not later than the sixth to the tenth day, we should right away have recourse to removal of the whole necrotic area (necrotomy) inside the necrotic boundary, leaving a few millimeters to one centimeter of necrotic tissue. This operation is absolutely safe, painless and bloodless. Then the remaining necrotic band of tissue, after a few days of open (unbandaged) therapy and application of drying-out procedure, will convert itself into a scab, solidly seated on the demarcation line. In this shape the extremity is ready for a final operation, using blind sutures.* On the feet, this may be the amputation of a phalanx, of a digit or digits, Lisfrank's operation, Pirogov's operation, or Bier's operation, depending on how high the involvement extends. On the hands, it will probably be a conservatory operation, because here every millimeter of tissue may have functional importance. After healing, the patient is ready for prosthesis. With this method the saving of time and of the patient's strength is inestimable as compared with the results of previously used conservative methods of case-handling.

* Without drainage.

But this of course is far from being everything which has resulted from our study of the frostbite question. Our studies revealed a general distress of the organism accompanying the local involvements, opened up a whole series of new problems, and above all showed the necessity of studying the tissue-conditions which develop during the pre-reactive phase, when morphologically the tissue seems to have suffered no harm, while in fact it has already been deprived of its viability to some extent.

This chapter of pathology has, in the last analysis, been set before us in a completely new light, and promises much that is new when it is further studied.

From Vrachebnoe Delo
/Surgical Affairs/,
No. 6, 1940.

Clinical Handling and Treatment of Frostbite

By "Meritorious Scientific Activist" Professor S. S. GIRGOLAV
and Cand. Med. Sc. T. Ia. ARYEV /Leningrad/.

For the last five years our clinic has been devoting a good deal of attention to the study of questions related to frostbite. A world-wide collection of literature on the subject was made and submitted to critical analysis. A procedure was worked out for inducing experimental frostbite, by means of which a number of old hypothesis were refuted which had long been copied from one text-book to another. Thus we were able to demonstrate 1) the fallaciousness of statements that frostbitten extremities are brittle, 2) the absence of hemolysis in frostbite and freezing, 3) the inhibiting influence of cold on wound-healing and along with this the different histological picture observed in freezing /with ice/ and in the effects of exposure to cold air. In special experiments we studied the structure of the liver, spleen and seminal glands when subjected to freezing, and the skin-structure when acted upon by cold. New light was cast on problems of the pathogenesis of frostbite, and we were able to describe five particular characteristics of the action of cold on the living organism, of which the so-called latent period of cold-action has particular significance.

We brought together and systematized four groups of "frostbite-promoting factors" and studied in detail the significance of each of these. We demonstrated the importance of systematic roentgenography in the diagnosis of the severity of frostbite, and we showed that there is a fundamental difference, in pathogenesis, clinical handling and treatment, between frostbite and burns /or scalds/, though until quite recently there have been attempts to draw an unwarrantable analogy between them. Finally, we demonstrated experimentally the fallaciousness of the old principle of "slow and gradual re-warming of frost-bitten extremities" and we showed the efficacy of the speediest possible re-warming of the tissues in frostbite.

However we were until quite recently not in a position to carry out systematic research to work out a clinical picture of frostbite and a systematic method of treatment. It is well-known that in peace-time frostbite is rarely encountered. While acting as consultants in a number of hospitals during the last winter campaign, we had opportunities to make up this shortcoming, and we are now able to systematize the problems of the clinical handling and treatment of frostbite cases, on the basis of a personal experience sufficient to permit us to generalize and draw conclusions.

First of all it is necessary to agree upon a nomenclature and classification for frostbite.

Among the many incorrect a priori thesis in frostbite-lore, the older surgical text-books have endowed us with an obsolete classification, built on the notion of a similarity between frostbite and burns /scalds/.

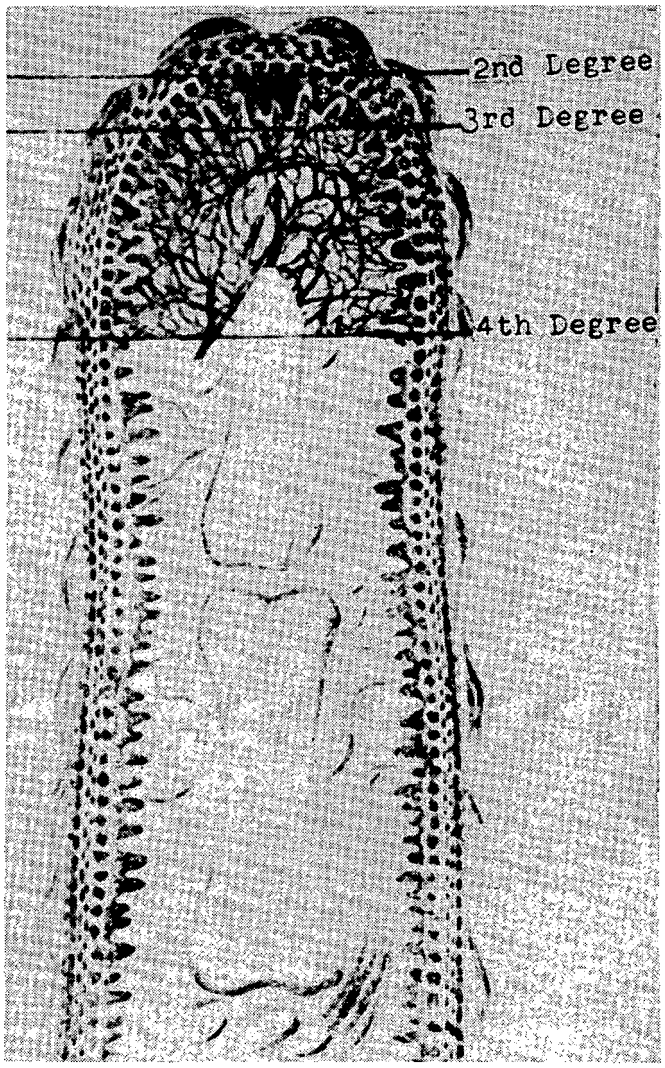

Fig. 1

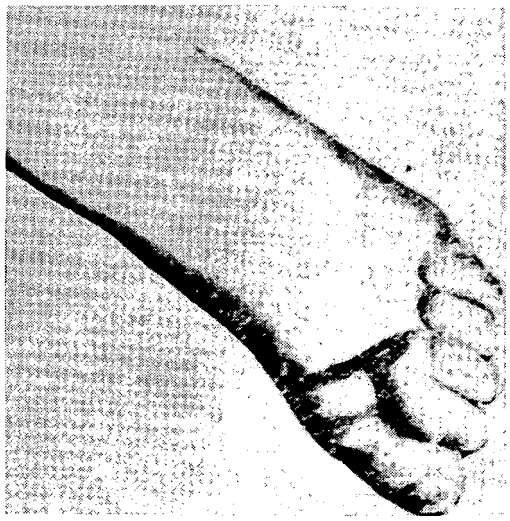

Fig. 2

Fig. 3

In distinction to other injuries and diseases, frostbite submits easily to a system of classification based on anatomical principles, that is, on the same principles as the classification of wounds. This is so because of the regularity of location of frostbite, which in the overwhelming majority of cases involves the digits of the feet and hands. It may be said that the ankle and wrist joints constitute a boundary above which frostbite seldom appears, and this circumstance permits us to differentiate a number of typical clinical symptoms in frostbite, which are quite sharply distinct one from the other, depending on the depth of penetration of the pathological change.

It is necessary to distinguish between frostbite prior to the stage of inflammatory reaction, and during the stage in which this reaction is developing. In the first stage, the appearance of the frostbitten extremities shows nothing distinctive except an area of noticeable pallor and numbness in the hands and feet. Upon warming up, the inflammatory reaction begins; in this period we may distinguish four degrees, determined according to the depth /anatomically/ to which the pathological process has penetrated.

As will be clear from the sketch (Fig.1), cold may cause in the digits (1) transient disturbances of the vascular and neural apparatus, not accompanied by irreversible tissue-damage, (2) skin-damage, extending to the germinal layer but without necrosis of the latter, (3) damage to the germinal layer itself and, finally, (4) necrosis of the bones.

In (1) we have frostbite of the first degree, characterized by cyanosis and pallor of the skin, without formation of blisters. First degree frostbite clears up in the course of three to five days after the patient is placed in a favorable environment, and leaves no traces as far as skin-changes are concerned. With first degree frostbite we may include the so-called "chilblaining" or "frosting"*, a quite serious ailment under winter warfare conditions; radical treatment thereof is impossible unless the "frosted" extremities may be given a prolonged warming up, which is difficult to manage in military operations in winter.

As stated, the appearance of "chilblaining" or "frosting" is reminiscent of first degree frostbite, being distinguished from the latter only by its chronic course and periodical aggravation in recurrent cold-spells.

In the next degree (see Fig.2) it is blisters which are determinative in the clinical picture; they appear on the second or third day after the start of the reactive period and remain for 5 - 7 days, after which they shrivel up and fall off. In this type of frostbite (second degree) new pinkish skin forms under the sloughing blisters, since the germinal layer remains unharmed. In second degree frostbite the nails may come off, but since their matrix remains undamaged, the missing nails will grow in again. Hence in this degree of frostbite there is no irreversible damage to the dermal layers. In all of the three higher degrees of frostbite the content of the blisters may be now of a fluid character, now of a jelly-like appearance (clotted with fibrin). There is no relation between the nature of the blisters and the severity of the damage suffered.

* See footnote on page 85.

In third degree frostbite the germinal layer is destroyed, and thus it takes a course in which we may distinguish a stage of blister formation, a stage of absorption of necrosis and formation of granulation-tissue, and a stage of eschar-formation and epithelialization. In the first stage, after the blisters open, we have the formation, not of a pink-colored germinal layer covered with a white film of fibrin, but of a dark brown skin impregnated with ecchymoses. Later the necrotic areas of the skin are absorbed, and granulation-tissue develops which in time epithelializes, either by itself or under the influence of treatment. Very often all the stages of development of third degree frostbite will proceed under the scab, and when the scab falls off there is revealed in many cases a newly formed scar. Thus it is granulation and scar-formation which distinguish third degree frostbite from that of the first and second degrees, in which as we have pointed out neither granulation-tissue nor scars are formed.

In the deeper damage of fourth degree frostbite, it is necrosis of the bones which is determinative in the clinical picture. In the first stage of this type of frostbite the clinical picture is characterized by necrosis of the skin, which not infrequently separates from the undamaged regions. In the second stage there develops a typical picture of moist or dry gangrene, and a demarcation-band forms. The third stage is that of getting rid of the mummified tissues, either spontaneously or operatively, and of the development of granulation-tissue. In the fourth stage epithelialization occurs, with the scarring over of a spontaneous or operative stump.

In frostbite, it is in the initial period of the involvement that diagnosis of the severity of the damage is beset with difficulties; later on, the task is rendered easier by the development of granulation-tissue and osteomyelitis. Among the symptoms which serve for diagnosis in the initial stages is the absence of blisters, indicative of first degree frostbite. For differentiating among the other three degrees of frostbite, it is necessary to open the blisters. When a pink germinal layer is discovered, the diagnosis of second degree frostbite becomes indubitable. It is more difficult to differentiate between the third and the fourth degree. Here it is necessary to be guided by the extent of the injury. When there is necrosis of the skin extending to the whole terminal phalanx, fourth degree frostbite is likely; when there is necrosis of the skin over the whole surface of the digit as far as the metatarso-phalangeal and metacarpo-phalangeal joints, the diagnosis of fourth degree frostbite becomes indubitable. This thesis is based on the constancy and regularity of the location of frostbite damage, which takes the shape of a wedge running along the instep and sole of the foot, or along the back and palm of the hand. The depth and extent of the tissue-damage in fourth degree frostbite may be further determined by certain supplementary methods: suspicious areas of the skin may be tested by pricking the surface, after first processing it with alcohol. The complete absence of pain twenty-four hours or more after the frostbite occurred is, according to Billroth, evidence of irreversible necrosis of the tissues; the same thing is indicated by the absence of blood-flow from the punctures.

It is particularly difficult to diagnose the severity of the injury in frostbite of the sole of the foot, where the thickness of the epidermis, impregnated with decomposing blood, may obscure the picture for a long time.

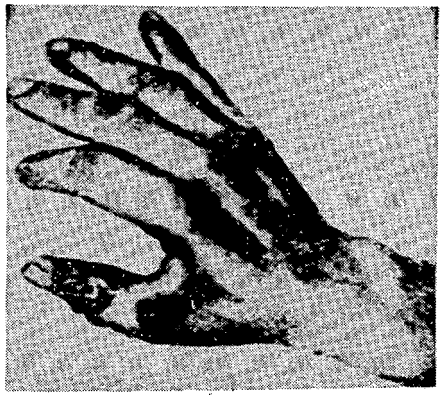

Fig. 4

Fig. 5

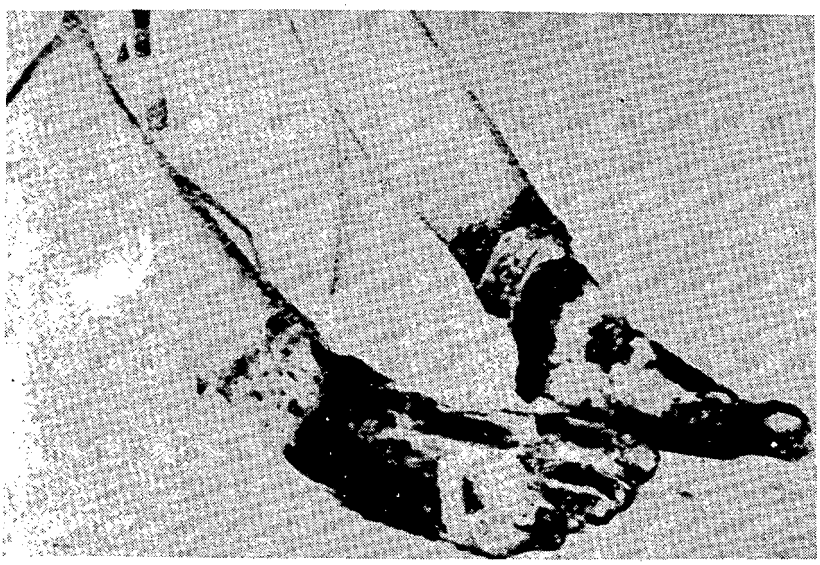

Fig. 6

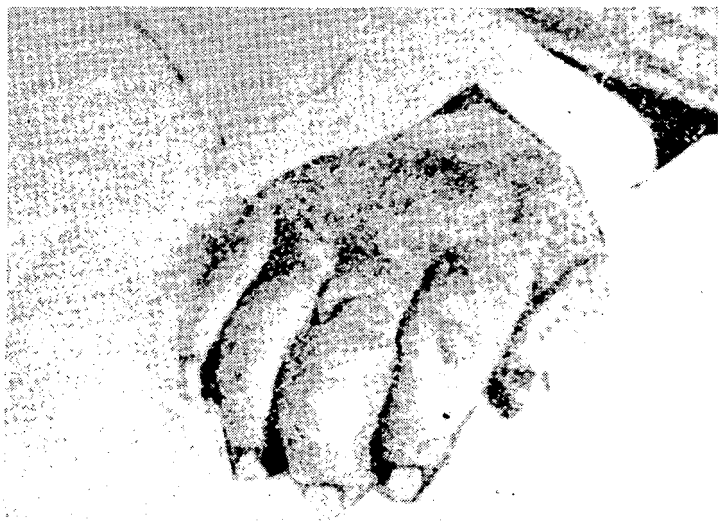

Fig. 7

As soon as the demarcation-band has formed, the clinical picture comes out much more sharply and it becomes possible to make a final determination of the extent of the damage. Later, we very often observe the phenomenon of the "displacement" of the demarcation-band peripherally toward the extremities. No-one can doubt that some part of the pathological processes at the necrotic boundary has a reversible character; nevertheless the "displacement" of the demarcation band is in part a mere illusion, because in the interior parts of the frostbitten region a complete restoration of the injured tissues may be taking place (second-degree frostbite), and after the necrotic layers of the epidermis have peeled of the new skin which comes to light gives the illusion of a displacement of the demarcation band.

Frostbite of the face /or head/ has its own particular appearance and clinical picture. Here neither blisters nor granulation-tissue are formed. Most often we observe hemorrhages in the skin of the cheeks, chin, and the region over the arch of the brows. These hemorrhages usually have the appearance of dark blue blotches, but in one case, an 18-year old girl, we observed frostbite in the form of a crimson blotch covering the whole left cheek. On the nose, solid infiltrates may form, of a pale yellow waxy color, separated by a quite sharp border from the remaining parts of the nose. Both infiltrates and hemorrhages are subsequently absorbed, even though very slowly.

Frostbite of the ear takes a clinical course the same as that of frostbite of the limbs, with the difference however that in fourth-degree involvements it is not osseous tissue which is injured, but cartilaginous tissue.

Wound-damage, particularly gun-shot fractures of the bones, may alter the clinical picture of frostbite and increase the extent of the injury. The circulatory embarrassment which may develop in a limb where there is a bone-fracture will tend to promote an intensified transudation beneath the epidermis and an increase in the number and extent of the blisters. Thus for example Fig. 7 shows a hand covered with blisters. This patient had a gunshot fracture of the humerus. The appearance of the hand seemed to indicate a grave case of frostbite. In reality it was only of the second degree. The development of blisters was facilitated by the hampered blood and lymphatic circulation in the wounded arm.

Frostbite of the extremities as a rule takes a course free of infective complications. This is sometimes really surprising, when the extent of the damage is considered. Nevertholess the rarity of infective complications in frostbite is a fact which has by now been statistically established.

The most frequently encountered infective complication in frostbite is sluggish phlegmons* which appear along the course of the lymphatic vessels and veins. These phlegmons, in spite of their local character, may cause quite a lot of tissue-destruction. In a number of cases where only the toes and the tip of the heel suffered frostbite, the associated phlegmons destroyed a considerable part of the arch of the foot.

Purulent arthritides of the interphalangeal and of the metatarso-phalangeal joints are relatively frequent. Generally speaking, these arthritides develop as a monoarticular involvement, but in one case we observed purulent

* Phlegmon: defined as suppurative inflammation of the areolar tissue. (Tr.).

arthritis of every interphalangeal joint of both hands, without exception. In this patient, high fever and a serious general condition persisted until all of the affected joints were opened.

In one patient we observed general infection and death resulting from an infective complication of fourth degree frostbite in all four limbs. From the very beginning it was possible to see that demarcation of the necrosis was delayed, a fact that was later verified histologically. In addition to the frostbite, the patient had a serious gunshot fracture of the femur, and this apparently exerted an influence in the direction of enfeebling the defensive powers of the patient's system. Staphylococci were found in a culture of his blood.

As will appear from the above, treatment of frostbite is practicable both during the stage prior to the inflammatory reaction, and during the stage when it is in progress. In the first case the measures we take are of a first-aid nature and entail the speedy re-warming of the frost-bitten extremities, the restoration of circulation in them, and the prevention of infective complications. These purposes may be achieved by warming the limbs in hot-water baths, by massage, and by processing the skin with alcohol.

If one follows the traditions, the water baths may be heated up gradually to body temperature. It does not follow however that one should begin with the baths at a temperature lower than that in the tissues of the frost-bitten extremities, because in this case what would happen is a further cooling of the affected feet or hands. The best course is to suggest to the patient himself that he should decide the water temperature by feel, that is, by how the water feels to the injured extremity itself. If it feels cold to the patient, hot water should be added to the bath, the temperature being gradually brought up in this manner to 38 - 40°C. The temperature of the bath must not be taken higher than this. One may remark that under war-front conditions it is often impossible to employ such treatment for lack of a source of heat; then massage is the only measure we can take. Moreover, war-time frostbite has its own pathogenetic peculiarities and it is often difficult to determine the time when the exposure to cold ceased; in most cases it may have taken three or four days for the frost-bite to take form, during which period the action of cold may often have been interrupted for short spaces of time.

It is essential to combine the water-baths with massage, which is often used both independently of the baths and in addition to them. Massage should be carried out if possible with clean hands and should continue until warmth and erythema is secured in the frostbitten area. If the inflammatory reaction is already in progress /edema/, then massage is contra-indicated.

After the frostbitten extremity has been processed in the manner described above, the skin is gone over with alcohol and the limb itself is placed in a raised position. When the patient is in transit, a dressing with grease or ointment is put on the frostbitten foot, this being intended to protect the patient from further frostbite. On the same line of reasoning, moist dressings ought not be put on a patient in transit. And here it should be remarked that in general moist dressings are not indicated for frostbite, since they favor the development of moist gangrene.

Fig. 8

In transit, a frostbitten extremity should be immobilized and the patient should be transported in a reclining position.

In recent times experimental data have been accumulating which show the great value of ultra-high frequency radiation as a first-aid measure in frostbite. To just the extent that we are advocates of rapid warming up of frostbitten limbs --- which can be accomplished in the most thoroughgoing manner with UHF --- we are also convinced of the efficacy of using this radiation for first-aid purposes in frostbite. As a final first-aid measure in frostbite, each patient is given a prophylactic dose of anti-tetanus serum (1500 units).

From the time that the inflammatory reaction sets in, frostbite treatment should be carried out in a manner strictly adjusted to conform to each degree and stage described above. We particularly emphasize that there does not exist any universal nor particularly any specific treatment for frostbite; this is very evident from the diversity of the clinical picture. Recently, as in the past, large numbers of medicaments have been proposed, and are still being proposed, which are imagined to have specific curative properties or which have a "beneficial" effect on frostbite, no matter whether the latter involves necrosis of the bones or the most superficial damage to the skin, and no matter what the stage of progress of the ailment may be. Among them we have kerosene, iodine, goose-grease, carotene, etc. We could expand the list quite considerably from data in the literature, but we shall not do so; we assume that once the realities of the clinical course of frostbite are grasped, it is impossible not to understand that there are no specific nor universal properties in any of the medications recommended for frostbite treatment.

In conformity with the proposed classification for frostbite, in the first degree of this ailment we recommend repeated processing of the skin of the affected area with alcohol, plus physiotherapeutic procedures.

In second degree frostbite the blisters are removed and the germinal layer thus revealed is processed with tanning agents (for instance, a one or two percent solution of brilliant green or methylene blue). This processing with tanning agents is continued until a scab is formed, under which further healing will proceed. In third degree frostbite, after removal of the blisters, a scarification of the surface layers of necrotic skin is carried out and "open" /unbandaged/ treatment, in a covered bath, is instituted. When this is impossible, dressings with alcohol, i.e. with a tanning medium, are applied to necrotic areas on the hands. Where granulation-tissue is forming we at first use a dressing with MIKULICZ's OINTMENT, and in the stages when the granulations are developing nicely and consolidating (prior to epithelialization) we apply dressings with a neutral ointment. Physiotherapeutic procedures are also used in second and third degree frostbite throughout the various stages of development.

Treatment of fourth degree frostbite is the most complicated. After processing the areas of moist gangrene with alcohol, the nails are removed, along with any removable portions of dead tissue (including fingers). The remaining dead tissue is scarified with deep incisions. The operation is carried out without anaesthesia. Fig. 8 will give an idea of the appearance of a foot with fourth degree frostbite, when processed according to this method.

After this processing is carried out, a frostbitten foot is put in a covered bath, while for a frostbitten hand an alcohol dressing is used. The mummification which goes on for ten to fifteen days will prepare the way for final amputation, including osteoplastic amputation. Skin grafting may also be used, according to the methods of Thiersch and Davis. As to what type of operation is indicated, the important criterion is whether the injury is located on the foot or on the hand. In the first case standard operations are the rule [those of Lisfrank, Pirogov, or Bier]; in the second case the amputation is performed on a line directly adjacent to the demarcation zone.

General building-up treatment, vitamin-rich diet, blood transfusions, therapeutic physical exercise and physio-therapeutic procedures will, in frostbite of all degrees and at every stage, help to prevent infective and later neurotrophic complications, to promote the rapid epithelialization of the granulation-tissue, and to get rid of the progressive loss of joint mobility which is observed in severe frostbite cases.

Therapeutic measures for frostbite of the extremities may all be set forth schematically as in the following table.

TABLE OF TREATMENTS
Frostbite of the extremities

1. IN THE PERIOD PRIOR TO THE INFLAMMATORY REACTION

ALL DEGREES: Rapid rewarming (including the use of UHF). Massage. Sterilization of the skin (alcohol, benzine). Immobilization and elevation of the limb. In transit, bandage with neutral grease. In hospital, "open" treatment or alcohol dressings. In all cases injection of a prophylactic dose of anti-tetanus serum (1500 units).

2. DURING THE PERIOD OF INFLAMMATORY REACTION

FIRST DEGREE: Repeated processing of the skin with alcohol. No dressing.

SECOND DEGREE: Removal of blisters. Repeated processing of the skin with tanning agents until the spontaneous sloughing of epidermal "sheathe-scabs" and of the nails.

THIRD DEGREE:
- First stage: Removal of blisters. Incising of the necrotic tissues. "Open" treatment. When it is impossible to use "open" treatment, and when it is the hand which is involved, use alcohol dressings.
- Second stage. Ointment dressings on the granulating surface; no dressing during scab formation.
- Third stage. Scar formation; no dressing.

FOURTH DEGREE:
- First stage. Incising and removal of necrotic tissues. Removal of nails (conversion of moist gangrene into dry). Treatment by "open" method. On the hands, alcohol dressings on the necrotic areas.
- Second stage. Exarticulation of necrotic bones (when the demarcation proceeds past the joints). Removal of portions of bone protruding from the granulation tissue. "Open" treatment or ointment dressings.
- Third stage. Encouragement of granulation (MIKULICZ's ointment, physiotherapeutic procedures).
- Fourth stage. Skin grafting (on hands), osteoplastic and corrective operations (on feet).*

3. FOR ALL DEGREES AND ALL STAGES

Therapeutic physical culture. Physiotherapeutic procedures. General treatment (particularly blood transfusions, as indicated). Diet (vitamin-rich). Relieving of pain.

4. FOR ALL DEGREES AND ALL STAGES OF EPITHELIALIZATION

Special treatment of vascular and nervous derangements.

It is evident that these therapeutic measures will conform to the general methods of treatment accepted in modern clinical practice, and must be strictly adjusted to the diverse and complicated clinical picture of frostbite of the extremities.

As for frostbite of the face [or head], it is mainly handled by the "open" method. The skin of the frostbitten region is repeatedly processed with alcohol and is given physiotherapeutic treatment.

In conclusion, some remarks about anti-frostbite prophylaxis for the individual. The most effective means of prophylaxis are proper footwear and clothing. Greasing the skin may have some significance as an auxiliary measure in the prophylaxis of the face and hands. In the case of the feet it can scarcely be recommended. Anointing with skin stimulants (infusion of mustard) does not give the desired effect; it has no foundation from the point of view of the pathogenesis of frostbite, and if used systematically every day (which is the only procedure that could be of interest to us for war-time purposes) it may produce exactly the opposite of the desired effect, as it will maintain a continual inflammation of the skin.

* When the demarcation passes the diaphysis of the bones under the scab, osteoplastic and corrective operations may be performed when complete mummification of the necrosis takes place.

From Vrachebnoe Delo, /Surgical Affairs/ 2, 96-100, (1941)

SOME NEW MEASURES IN THE TREATMENT OF FROSTBITE

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Of all chapters of surgery, that of frostbite has had the least work devoted to it. In first aid and in subsequent treatment, there were solidly entrenched, rule-of-thumb traditions, and very few have tried to rise superior to them.

The reason for this lies in the comparative infrequency of frostbite in times of peace and in the consequent lack of any accumulation of clinical experience.

But even wartime experience was not enough to introduce any real changes in the business of treating frostbite. Thus in spite of the enormous number of frostbite cases observed in the French Army in the first Imperialist War, treatment thereof made few advances and was limited to the use of hot water immersion, various antiseptic ointments, light massage, plus air-drying procedures. Such treatment included wrapping the frostbitten extremities in cotton wool and keeping them in a raised position.

The unsatisfactory state of the question of treating frostbite resulted in this subject's occupying a high place on the order of the day at the Twenty-fourth All-Union Congress of Surgeons.

At this congress, questions in connection with frostbite etiology, pathogenesis, prophylaxis, first aid and subsequent treatment were widely discussed; on many of these questions there was considerable divergence of views.

Ordinarily our clinic, located in the south, has by reason of the climatic conditions a very restricted number of patients suffering from frostbite. Nevertheless observations over a period of fifteen years have made it possible for us to work out certain definite ideas. We had the chance of trying these ideas out on a large scale during the severe cold of the winter of 1939-40, which was quite unusual for the southern provinces of the Union.

Our experience has confirmed the fact that in frostbite it is only very rarely that primary gangrene is observed arising from necrosis of the tissues caused by the action of cold. This gangrene may occur only with extraordinarily protracted action of a very low temperature upon the tissues, in which case, according to SCHADE's theory, the colloidal structure of the tissues is altered and the rate of biological and chemical processes is markedly slowed down. The changes in the tissues then have for the most part an irreversible character and all measures directed toward the restoration of circulation are doomed to failure. In such cases the sum total of therapeutic measures does

not amount to more than an endeavour to see that the tissues are guarded against infection from outside.

In the overwhelming majority of cases we find necrosis developing secondarily. The presence of edematous intumescence, the congested nature of the erythema, the subsequent appearance of blisters and the sanguineous content thereof, all these clinical findings noted in frostbite point indubitably to the factor of stasis in the changes which develop. Autopsy examinations, showing stasis in the venous system with formation of thromboses, support and supplement these clinical findings. The undoubted therapeutic importance and high value of massage in frostbite first aid, which everyone affirms and no one disputes, is simply an indication that the derangement of the blood-vessel system lies mainly in the venous channels. The stasis which develops in these cases has initially a reversible character; it is just this reversibility of the changes in the veins that is the explanation of the good therapeutic effect obtainable with massage.

During the initial period of frostbite the tissue changes taking place in the majority of cases are NOT of an irreversible character; the experimental researches carried out at S.S. GIRGOLAV's clinic are weighty confirmation of this fact. These researches have shown the incorrectness of the notion, well established in the literature, that hemolysis of the blood takes place in frostbite. So long as the experimentation is conducted under conditions within the limits necessary for keeping a macroorganism alive, then no hemolysis occurs.

The damage manifesting itself in frostbite has a secondary character; it depends not on the primary effect of thermal trauma but on subsequent changes and disruptions in the blood circulation. This permits us to suppose that with proper, well-calculated and timely aid the disturbances initially arising could be corrected.

The treatment of frostbite may be split up into two stages, namely first aid, the endeavour to eliminate the after-effects of the action of cold on the tissues, and then the conquest of the changes of a local and general character which meanwhile take place. It is difficult to over-estimate the significance of well-calculated, complete and timely first aid, on the adequacy of which will depend in large measure the whole further development of the process and its outcome.

> At the Twenty-fourth Congress of Surgeons the question of warming-up procedure in frostbite was widely debated. Two opposing points of view emerged: there were some (LUBO, GOL'DMAN) who adhered to the old method of treatment with slow re-warming; others (GIRGOLAV, ARYEV) expressed themselves in favour of energetic re-warming measures, with the patients put as soon as possible into an environment of considerably higher temperature so that warming may be accelerated. The choice of one or another method of re-warming must be based first of all on the endeavour to get the patient's system as a whole out of the over-cooled state, because further lowering of the body temperature, if the critical point is approached, constitutes a positive threat to the life of the patient; on the other hand, it is essential to

have a clear idea of how much influence the re-warming process may exert on the completeness of the removal of local derangements which may have developed.

In giving first aid to those suffering from the effects of cold, we find patients of two different categories. In some cases the dominant symptoms are those of the general influence of cold upon the organism as a whole, this influence producing a general depression of all the vital functions. These patients are benumbed, with the extremities half contracted and movable only with difficulty; they are markedly apathetic, drowsy, in severe cases unconscious. Under these circumstances all our efforts should be directed to one end; to put a stop as soon as possible to any further action of cold on the organism and to create all possible conditions favouring the speedy elevation of body temperature.

In such cases the fear of overheating the tissues has little foundation, if only for the reason that the low thermal conductivity of the tissues of the human organism will itself ensure the gradualness of the re-warming, however much we try to speed it up by putting the patient in a warm environment.

It fell to us on five occasions to render first aid to patients with general symptoms of over-cooling. Having installed the patients in a room of the receiving ward with a temperature of 19° - 20° C, we were able to satisfy ourselves that rapid re-warming had no negative influence in the development of local tissue-derangements, and that measures taken under these circumstances were effective in saving the lives of the sufferers. Indeed, in spite of being placed in warm surroundings and in spite of energetic massage of the skin, the patient's body remained cold for a long time; this fact compelled us to seek new ways to speed up the re-warming process.

To this end, we in three cases made use of intravenous injections of a ten percent solution of calcium chloride. Over a period of half an hour we injected 5 cm^3 of this solution every ten minutes. The introduction of the calcium produced in the patient a very beneficial sensation of re-warming, which coincided with an objectively observable hyperemia of the integuments. We gained the impression that the internal action of calcium chloride is such as to make it quite an effective agent, enabling us to speed up the re-warming process, considerably; it is therefore one of the most important means of restoring the patient.

Thus for purposes of urgent first aid in hypothermia we have recourse to placing the patient in warm surroundings, giving energetic and prolonged massage of the body, intravenously injecting calcium chloride, administering hot tea and strong wine per os.

In massaging we endeavour to avoid excessive traumatization of the integuments which are weak and suffering from thermal trauma, and also to lessen the chances of their becoming infected. After wiping the skin over with alcohol swabs we wrap the patient in a sterile towel, pulling strongly on the edges so as to bring it tightly into contact with his body; then we massage energetically over the towel with the open palm. This method has great advantages even over massage with the hand in a sterile glove, since it

is milder, easier on the integuments, develops a considerable amount of heat and gives the maximum protection against infection.

In one particularly serious case when the patient was unable to swallow, we successfully fed him hot liquids and alcohol through a stomach tube introduced by way of the nose.

Thus our procedure in giving first aid to frostbite sufferers is based on the endeavour to put a stop as soon as possible to the action of cold on the tissues of the organism and to get the blood-circulation renewed by speeding up the re-warming process. On this basis, we have no fear of putting the patient immediately into a quite warm room, as stated above.

We have never had recourse to rubbing the frostbitten parts of the body with snow, as so many recommend, because under hospital conditions we were in a position to use other more modern methods. Nevertheless we are inclined to think that rubbing with snow has become so widely regarded as the best method of re-warming parts of the body and has to such an extent justified itself in the vast experience of people dwelling in the north, that it cannot be discarded and will still find its proper use under given circumstances. Thus for instance if frostbite occurs somewhere in the open country, 15 to 20 km from the nearest dwelling, then it would take two or more hours to get the patient in; under these circumstances, what procedure have we more reasonable than to treat the patient on the spot by rubbing the members with clean soft snow, by which means we usually succeed in getting the pallid bloodless integuments into a ruddy hyperemic state?

Now let us turn to the procedure we have been using for treating the local derangements caused by the action of cold. We think it essential to point out that immediately after thermal trauma it is utterly impossible to determine the degree of frostbite. This is quite understandable if we take into consideration the fact that the development of necrosis is basically a consequence of disturbed circulation and neurotrophic derangement, the extent and depth of which may be established only from subsequent observation.

The presence of blisters of turbid sanguineous content can not be considered a precisely determinative sign of second degree frostbite; they do not exclude the possibility of the deeper-lying tissue-changes which characterize third degree frostbite. Even after removing the blisters and revealing the deeper tissues it is difficult to judge the degree of reversibility of the destructive process.

On the basis of our observation we have found that it is to some extent possible to determine the degree of destructive change from the coloration of the tissues after the removal of the epidermis. Thus a carroty coloration of the tissues makes it very probably indeed that they still possess viability, while a dark cherry-coloured tinge is an indication of a far advanced necrotic process and deep-lying destructive changes.

The general course of treatment of the local derangements in frostbite should be decided on the basis of an accurate analysis of just what pathologo-anatomic and biological changes really do occur inevitably as a result of the action of cold. The derangements which take place in frostbite may be summed up as (1) considerable disturbances in the blood circulation, of various

degrees of reversibility or irreversibility, (2) destructive processes in the tissues arising from irreversible local changes in the vascular and nervous systems, and (3) the development of an infective process, a complication which is an inevitable concomitant of necrosis.

If we take it that our task is to secure the maximum restoration of the viability and functional integrity of the tissues, we must primarily concentrate all our attention on measures directed toward the fullest possible restoration of the disturbed circulation.

When the pathological changes in the venous system which take place in the first few hours after frostbite are compared with the changes which occur in thrombophlebitis, one can not help noticing the points of similarity, even though there are indubitable quantitative and qualitative differences in the intensity of the process. On the basis of our own data we can confirm that the repeated application of leeches has a good effect, sometimes a strikingly good effect, in thrombophlebitis cases where gross pathological changes resulting from infection have already taken place. Thus it is natural to assume that in the initial period of frostbite, when we have only venous stasis and when the vascular walls have not suffered any great amount of change, the use of leeches should give favourable results. For this reason, if in giving first aid to frostbite cases we do not secure a definite active hyperemia in the affected extremities in spite of all the mechanical and thermal methods we use, then we at once have recourse to leeches. The beneficial effect of leeches manifests itself in a considerable lessening of pain, edema, and skin-cyanosis, testifying that an improvement in the blood circulation has taken place. Leeches have considerable advantages over the use of scarification as recommended by NÜSSKE for cases of stubborn edema. These advantages may be summed up as: (1) less traumatization, (2) considerably less possibility of subsequent infection, (3) the sucking-out action of the leeches is considerably more effective than the passive flow of blood from scarifications, (4) a prolonged subsequent flow of blood from the leech bites, which we make no attempt to arrest, and finally (5) the specific effects of hirudin.

The measures indicated considerably enlarge our ability to exert an active influence on the reversibility of the process. Nevertheless there still remain numerous cases in which no measures we take will enable us to prevent the incidence of necrosis. This happens in neglected cases, where the destructive process has gone too far and has become irreversible. In these cases the first aim of our treatment is prophylaxis against the development of infection, to the severity of which the acutely lowered resistence of the tissues will contribute. To forestall the additional complication of infection, we apply to the frostbitten areas gauze compresses liberally moistened with equal parts of 20% camphor oil and ichthyol, or, better still, we leave the frostbitten areas open and anoint them with this mixture. We have formed a favourable impression of the effects of this ointment, which has analgesic and antiseptic properties. However with this processing of frostbite the blisters which are left constitute a perfect nutritive medium and refuge for bacteria. With this concept as our starting point, we found ourselves on the right road for the initial processing of frostbite cases in which there was blister-formation and which were usually on the boundary between the second and third degrees. The technique of this initial processing of frostbite is completely parallel to that which we employ in the initial processing of burns, namely MITCHERIN's method with certain modifications introduced by one of our number (V.Ia. VASIL'KOVAN). It may be summed up as follows: a preliminary in-

jection of 2 cm^3 of 1% morphine solution; careful wiping of the skin in the vicinity of the frostbitten areas with alcohol; then the blisters are carefully removed with tweezers and swabs moistened with a 5% solution of aqua ammoniae. The epidermis usually comes away very easily, and on the upper surface of the fingers or toes it brings the nails off with it. The final step is to apply a dressing consisting of eight layers of gauze moistened with a 5% solution of tannin in mercuric chloride solution (1:1000). Over the gauze a thick layer of cotton wool is placed and firmly bound. One should remark that the removal of blisters in frostbite is considerably less painful than in the case of burns.

We have handled eight cases of frostbite of the hands and feet according to this method, and were left with a very favourable impression of its effectiveness. Almost immediately upon processing there was a sharp decrease of pain felt, temperature throughout was not high, and the general state of the patients remained quite satisfactory. After 18 to 20 days we were able to assure ourselves, upon removing the dressings, that the whole frostbitten surface had successfully covered itself with soft and recently formed epidermis: if however, as is often the case, there are areas of deep-lying necrosis under the blisters, then after taking off the dressings we find that the necrosis takes on the character of a dry gangrene, with a tendency to speedy demarcation and sloughing of the necrotic tissues. In three cases of frostbite of the hands we carried out the following observations for purposes of comparison: one of the frostbitten hands we processed with the tannin and mercuric chloride, on the other hand we neglected to take off the blisters but gave the frostbitten areas repeated applications (twice in the 24-hour day) of ichthyol-camphor ointment. The healing process in each member proceeded differently: on the side given our treatment, the areas with second degree tissue damage were in 18 to 20 days already covered with new epidermis; on the side kept on the ichthyol-camphor treatment the formation of epidermis, which followed upon the gradual sloughing of the necrotic epidermis, was accompanied by suppuration and dragged out for 35-40 days. We may mention that after this latter treatment the extremity remained swollen for a very long time, while on the other side, processed with tannin and corrosive sublimate, there was almost no edema. On the side not processed with tannin and corrosive sublimate, the development of the inflammatory process caused pain, and was accompanied by subfebrile or sometimes even higher temperatures.

In our tactics for treating third degree frostbite we are in full accord with those authors who consider it essential to withhold the necrotic areas from operative removal until such time as the demarcation line has become completely and visibly defined. Only when there develops necrosis taking a course of the moist gangrene type with gross septic symptoms does the necessity arise for early amputation while there are still indications of viability.

In observing several cases of frostbite of the hand, our attention was drawn to an interesting phenomenon. It seems that ordinarily the thumb of the hand suffers least of all; even in those cases where the remaining four fingers become gangrenous right to the tips of the metacarpal bones, the thumb is still preserved completely, or, at the worst, suffers only necrosis of the terminal phalanx or part of the next. This fact may be explained as follows: (1) the biphalangic thumb, the shortest of the digits, has at its base the substantial muscular mass of the thenar, which gives the thumb considerable reserves to draw on; (2) the principal blood vessels supplying the thumb are the most proximate branches of the radial artery and therefore are in the most

favourable position to become well filled; (3) it is also probable that there is some significance in the fact that a person suffering from the cold will instinctively close the fingers of his hand so as to cover the thumb.

The preservation of the thumb is of great value, because it preserves some of the functional powers of the hand.

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CLINICAL CONSIDERATION, CLASSIFICATION AND TREATMENT OF FROSTBITE

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After studying frost bite of different intensities over a long period in peace-time, and a large number of cases (hospital data) during the war, we consider that frostbite may be most effectively divided into four grades based on clinical findings and pathological anatomy, and characterized as follows.*

First degree: For a short time at first there appears a pallor of the skin, which later changes to erythema and a slight puffiness in the same area, resulting from hyperemia of the skin. On pressing this hyperemic area, the redness disappears. The patients report pain of varying intensity and duration (most frequently the pain disappears by the end of the second day), a burning feeling, hot glow, and itching. During the first few hours they complain that palpation of the hyperemic area is painful; later its sensitivity decreases, but a feeling of numbness persists for quite a long time, sometimes as much as six or eight days. This period indeed usually coincides with that of both clinical and subjective recovery, which takes place without loss of tissue.

Second degree: The start of the process is the same as in the first degree, but by the end of the first few days the patients are complaining of severe pain. The initial puffiness of the frostbitten area and adjacent healthy tissue is replaced by a considerable edema of the cellular tissue. The picture of weeping inflammation with copious exudation becomes sharply defined, and is accompanied by the appearance of flaccid, blisters of clear sanguineous jelly-like content. The Malpighian layer is revealed but remains completely intact. In uncomplicated cases the process ends in shriveling of the blisters and drying-up of the exfoliating epidermis, which then peels off of its own accord, revealing a tender pink skin.

Third degree: The initial symptoms are the same as in the second degree, but usually more marked. A persistent pallor of the skin is developed. Pain is so severe that the patient is unable to sleep without narcotics. A rapidly increasing edema appears, and the skin takes on a bluish-purple color. The blisters, which appear at a very early stage, contain a reddish-brown fluid and easily collapse when touched. A persistent loss of sensation is noted not only in the affected area of the limb, but also in a considerable part of the adjacent tissues. Within a few days time the hyperemic area is demarcated from the surrounding healthy skin which has a normal color, and one notices a

* This classification was worked out by ourselves and first put into use at the N.... Evacuation Hospital in the winter of 1939/40 during the war with the White Finns.

tendency of the demarcation-line to form a sunken groove. The Malpighian layer and the subcutaneous cellular tissue are destroyed. The skin rapidly turns dark, indicating necrosis due to complete failure of its food-supply. Subsequently, if the course is favorable, the process ends in the loss of the demarcated area of the skin and subcutaneous cellular tissue, which is converted into a thick mummified layer and then, if it is not forced, separates of its own accord from the outside toward the center. On the fingers and toes these solid necrotizing areas form so-called "scab-sheathes",* which upon termination of the process come off by themselves, bringing the nails with them. Under the scab the tissues are fully restored, sometimes even without the formation of noticeable scars, while in some of the protracted, sluggish cases thin actively forming scars appear, which when they finally contract leave some disfigurement.

Fourth degree. In the fourth degree of frostbite we should put those cases in which necrosis penetrates throughout the whole thickness of the soft tissues.

In this degree the beginning of the process may be quite indistinguishable from third degree frostbite, or it may have a more marked character. Within a few days there takes place a delimitation of the necrotic tissue from the healthy, by way of the formation of a surface demarcation-line. The unbearable pain which appears at the time the frostbite occurs may continue for a long time. The injury itself is most frequently of the nature of a moist gangrene, while in the healthy tissue there may be for a long time a persistent edema and loss of sensation. The tissue-necrosis increases very rapidly, while the further deepening of the demarcation-line proceeds very slowly, particularly delaying at the tendons, which may remain viable for a long time. The patients complain of feeling general debility, loss of appetite and poor sleep. With inadequate nursing, fourth-degree frostbite patients show increasing anemic symptoms.

The temperatures often give evidence of a toxic condition, the result of copious absorption of decomposition products.

Profound and stubborn neurotrophic and vascular derangements lead to the demarcation and sloughing of the whole of the soft tissue down to the bone, involving more or less crippling disability. Usually, in fact nearly always, frostbite affects portions of the limbs with thin muscular layers (the foot or the hand).

The treatment of a patient with fourth degree frostbite may last four or five months, and in some cases may drag out for a year.

I should mention that we usually took X-ray pictures three or four weeks after the occurrence of the frostbite and in a certain proportion of the cases we found no changes in the bones to have taken place in this period. A second X-raying after one to one and a half months had elapsed showed symptoms of osteoporosis well-developed.

With our patients, we had the opportunity to convince ourselves that the changes taking place and their intensity do not depend on the action of low atmospheric temperatures alone. Several very real factors come into play here; thus for instance we observed cases of third degree and even fourth degree frostbite (by our classification) which occurred secondarily after insignificant

* Crusts (Tr.).

wounding of the lower extremities with blood flowing into the footwear. The resulting dampness in the region of the foot increased the thermal conductivity of the footwear and thus caused the temperature of the tissues to be lowered. The other foot was completely uninjured.

Frostbite occurring with dampness as a contributing factor was called by DREYER "dampness-gangrene" (Nassengangrän). DREYER observed such cases in large numbers at the time of the Balkan War among soldiers in trenches filled with thawing snow. This was also the origin of the French term "trench foot". In cases of frostbite following serious gun-shot wounding, with destruction of the integrity of the bones and larger blood-vessels, the factor of disturbed circulation also comes into play.

It is impossible to explain the origin of "dampness gangrene" in terms of increased footwear heat-conductivity and lowering of tissue-temperature alone. GIRGOLAV considers that "damp cold undoubtedly causes neurotrophic changes, the nature of which we cannot consider to have been fully explained."

Among the numerous factors promoting frostbite we must include the wind, which keeps continually renewing the cold air in contact with the various parts of the body, particularly the uncovered parts. A major role in the incidence of frostbite is played by tight, ill-fitting footwear. According to GIRGOLAV's findings, "injuries to the feet make up from 70 to 90-97% of all frostbite cases." Usually however the boot itself is not tight, but, in the attempt to protect themselves from cold, our people wrap a great mass of foot-cloths around the foot, which squeezes the extremity and does nothing except create conditions favorable to frostbite. We have observed many cases of frostbite of the first and fifth toe due to transversal boot-pressure.

Particularly to be stressed as a frostbite-promoting factor is bodily fatigue. To use SORGE's phrase, "fatigue and over-tiredness are the best possible conditions for the incidence of frostbite". Nervous fatigue, drunkenness, an insufficiently strong physique and vascular ailments (general sclerosis or varicose dilation of the leg veins) all play an indubitable part.

In consideration of all these very real factors, the problems of frostbite prophylaxis take on a pressing importance, all the more so in wartime when mass prophylactic measures are necessary. Among them we should note the necessity of wide-spread educational work in military units, continuous toughening-up training in the winter season and in all weather, the most careful fitting of footwear, and the wearing of felt shoes in freezing weather.

Medical workers in the smaller military units should carry out periodical checks of the men's feet, taking measures wherever possible to combat sweaty feet, which in extreme cases may bring on frostbite. Since grease is a bad conductor of heat, it would be worth while to consider the matter of greasing the extremities. The provision of hot food and drink should be a focal point for the attention of commanders* and medical workers.

Non-medical first-aid, in the form of self-help or mutual assistance, has usually taken the form of rubbing frost-bitten areas with snow, and the

* i.e., officers. The Russians do not use the word "officer" except for foreign armies. (Tr.)

use of cold baths with hot water slowly added.

Researches in recent years have thrown some light on the intricate complex of changes taking place in the cells and tissues under the influence of frostbite, and have led to a revolution in our ideas on treatment.

A very large majority of the older and a few of the modern writers on the subject consider that the rapid rewarming of tissues suffering from some degree of frostbite will cause the development of gangrene and will have a destructive effect on the life-processes of the cells. A number of other authors consider that rapid rewarming of the blood-vessels leads to intensified thrombosing thereof and to the destruction of the erythrocytes. However BILLROTH long ago expressed doubts as to the necessity and efficacy of slow rewarming of frostbitten members.

LAPCHINSKI's experiments caused a complete about-face in our thinking on this matter. Twenty dogs, exposed to cold and rewarmed in a hot bath, had their reflexes rapidly restored and not one of them died; of twenty dogs rewarmed in a heated room but in a cold bath, eight perished, and when they were allowed to warm up in an unheated room, fourteen out of twenty perished (ARYEV). LEPESHINSKI and FLOKERMAN, KHASKELEVICH and VASIL'KOVAN* also came to the conclusion that it is essential to rewarm the organism in the shortest possible space of time. Further clinical and experimental study of this question in GIRGOLAV's clinic (ARYEV) has been even more indicative of the uselessness and unreasonableness of the method of gradual rewarming. The author is of the opinion that "rewarming" by means of cold baths and cold syringes and so forth is in reality only a further cooling of the tissues, and this is all the more true because the wetting of the skin in the bath increases its thermal conductivity. Both the work at GIRGOLAV's clinic and the convincing arguments adduced by other authors show that the treatment of frostbite by re-heating in warm baths and in warm rooms should be put into practice as widely as possible.

As a method of helping restore the circulation, massage merits consideration. But massage in the form of rubbing with snow is a completely superfluous procedure, since snow on contact with the body is speedily converted into water, and hence makes the frostbitten areas damp; moreover the gritty ice-particles contained in snow break through and contaminate the already damaged epidermis. We must also bear in mind the possibility of rubbing in dirty snow or microbes from the hands; also the possible dislodgment of the thromboses which form in the small bloodvessels shortly after frostbite.

Massage should be given only after first washing both the affected areas and adjacent parts with soap solution and then applying alcohol; likewise only after proper aseptic techniques in the treatment of the hands. GIRGOLAV further recommends that a sterile glove be used for massage. Further massage should not be given when some hours have elapsed after the incidence of frostbite, because by that time more or less marked inflammatory symptoms will have made their appearance and the injured tissues are then in need of absolute repose, plus warming.

In first degree frostbite we may follow up by simple irrigation with

* See page 26.

a 5% tannic alcohol solution or painting with a 2% solution of brilliant green; also with short sunlamp exposures (10-15 minutes) during the first three or four days, which will have a mild analgesic effect and will promote the rapid restoration of circulation.

In second-degree frostbite the irrigation should be more frequently repeated, using a 2 - 5% tannic alcohol solution or a 5% solution of methylene blue according to the method of GOL'DMAN and LUBO, so as to promote the maximum drying-out of the peeling skin and to preserve the blisters. To achieve this one should avoid putting dressings on a frostbitten extremity when there are blisters (if bandaging is necessary for transporting a patient, grease or ointment dressings should be used and the limb immobilized). Only in those cases where the content of the blister is suppurating under thick skin may one have recourse to puncturing it or trimming it down to the base.

KHASKELEVICH and VASIL'KOVAN recommend that immediately after processing the frostbitten parts a tannin-mercuric-chloride bandage should be applied (a 5% tannin solution in mercuric chloride 1:1000). One should however bear in mind that during the first few hours after frostbite and before exudation develops a rapid absorption of fluid is in progress; hence the application of mercuric chloride to a large area of frostbite may lead to the mercury poisoning of the organism.

To combat edema, keeping the limb in a raised position is very important; at the same time this helps to lessen the pain. A quite valuable supplementary analgesic measure is the use of the quartz lamp. For the same purpose we frequently had recourse to VISHNEVSKI's paranephral* blocking. We have repeatedly had the occasion to observe that novocaine blocking according to VISHNEVSKI's method is an excellent means of analgesia, and helps to speed up the demarcation process and the resorption of persistent infiltrates.

Academician BURDENKO recommends paravertebral anaesthesia by repeated injections of 80-120 cm^3 of 0.5 - 1% novocaine solution. He concludes that these injections help to restore circulation and protect the frostbitten areas from infection.

Many patients state that after irrigation of the frostbitten region with alcohol or tannic alcohol there is a brief sensation of burning, and then the pain ceases for some hours, sometimes for a whole day.

The use of "open" [unbandaged] therapy and blue-lamp irradiation under a hood has, in addition to the specific action of blue light on the tissues, another positive effect: the gradual warmth improves the circulation in the extremity and the drying-out of the epidermis in second-degree frostbite or of the deeper tissues in third and fourth degree frostbite. One should however guard against attempting to produce an excessive drying-out of the tissues by various physiotherapeutic means, because in this case the penetration of the demarcation process is slowed down, edema of the affected areas is intensified, and the patients begin to complain of a renewal of intense pain. In the penetration of the demarcation in depth and the development of gangrene in a frostbitten

* Vishnevski's work on novocaine block not available for check, but it seems this word should be "paraneural". In Russian the difference in pronunciation is slight. (Tr.)

area, the process most often takes on the character of a moist gangrene; hence it is essential to see to the aseptic processing of the frostbite field and to spare the injured tissues as much as possible. During this period a moderate drying out by physiotherapeutic means for the purpose of converting moist gangrene into dry, plus VISHNEVSKI paranephral* blocking, deep penetrative heating of the injured tissues and raising of the limb to combat edema, will hasten the demarcation process and promote the consolidation of a scab or mummification of the distal (injured) portion of the extremity.

In fourth degree frostbite, by the time the demarcation process has penetrated the soft tissues to the bone, the distal portion of the frostbitten extremity is completely mummified and shriveling up; a little forcing will cause it to separate at one joint-line or another. Sometimes it is necessary to assist this sloughing process by cutting the odd tendon connection or joint capsule. If after complete demarcation of the soft tissues and subsequent sloughing of the extremity the bone is left standing 1 - 1.5 cm out of the stump, then one should handle the wound conservatively, waiting for full covering of the bone with granulation tissue. Under these circumstances it is appropriate to use grease dressings on the stump according to the method of LEHR or VISHNEVSKI, or dressings with sterile vaseline oil, and these dressings should be changed as infrequently as possible. Usually the granulation process proceeds very slowly (sometimes taking two to three months).

When the waiting period is long drawn out, torpid, sluggish granulation of the stump develops inordinately, the whole stump being thus thickened. The torpid granulation-tissue is unable to rise to a height of 3 - 4 cm; it becomes covered with a glassy incrustation and takes on a persistent cyanotic tinge.

In cases where frostbite was contracted secondarily after severe gunshot injury to the extremity, the process of sloughing and mummification may proceed even more slowly and reveal a stump of even more unhealthy and sluggish nature. In such cases it is all the more necessary to amputate protruding portions of the bone, so as to facilitate the regenerative process in the stump.

It is of great importance that the limb should be absolutely immobilized. We are not proponents of ZUCKERKANDL's method of putting the frostbitten extremity in a plaster cast, because in this case we are deprived of the chance of using physiotherapeutic procedures; mummification of the necrotic areas is also retarded, and if edema increases the circulation in the stump is impeded.

I am purposely omitting the long list of antiseptic solutions and ointments used by various medical institutions and individual physicians. One might however be of the opinion that the antiseptic or healing properties of these medicaments are quite insignificant and we should not hope for very much from them.

Sometimes, when proven medicaments were not at hand, equivalent substitutes have been tried which looked as if they might achieve the desired antiseptic results, with some simultaneous tanning action. Thus Military Surgeon II Grade PAPKOV, finding himself in such a situation, began to use formalin for

* Paraneural

frostbite treatment in the same concentration as had been proposed for its use to replace alcohol in disinfecting hands and instruments (formalin 2.0, carbolic acid 1.0, distilled water 100.0). The author obtained not too bad results with it.

TUMPIANSKI recommends treating frostbite by dressings with diluted Lügol's Solution (iodine 1.0, potassium iodide 2.0, distilled water 100.0); he observed good results therewith.

An effort should be made to increase the general biological tone of the tissues. It is worth considering the prescription of calcium chloride per os and intravenously for increasing the phagocytic powers of the leucytes and promoting the most speedy resorption of thromboses.

In third or fourth degree frostbite, and also in cases with complications and a "septic" temperature, the prescription of large doses of white streptocide* and glucose is indicated. In such cases one should also make use of frequent blood-transfusions of small volume.

To recapitulate, we must recognize that in recent years very valuable progress has been made in the prophylaxis and treatment of frostbite.

In the matter of the classification of frostbite, we must give up treatment based on the old three degrees. All deep thermic injuries, in which restitutio ad integrum is impossible, where tissue-necrosis has taken place below the skin and cellular tissue, with subsequent loss of a part of the extremity, must be classed as of the fourth degree.

As a basic part of our treatment we must suppose the most rigorous aseptic technique, rest, and an effort to handle the wound by "open" [unbandaged] methods, with our entire attention directed toward improving the circulation in the affected extremity. A quiet mental attitude, general bodily hygiene, and proper food are very important supplementary factors in the treatment of the frostbite patient. As soon as inflammatory symptoms and purulent exudation disappear it is as a rule essential to begin the use of therapeutic physical exercise.

* Streptocide – Sulphanilamide, called "white streptocide" to distinguish it from "red streptocide" (Prontosil Rubrum) and "yellow streptocide (Prontosil Flavum). See U.S. Dispensatory (24th Edition 1947), pp. 1148, 1610 (Tr.).

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ON THE CARBOHYDRATE METABOLISM RATING OF PATIENTS WITH FROSTBITE.*

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We have been conducting research on certain aspects of carbohydrate metabolism in frostbite patients. This is a question of interest, because hitherto in the literature it has been stated that under the influence of cold there takes place a real disturbance of the carbohydrate metabolism, in many ways comparable to the action of adrenaline on the organism (SCHADE); in fact hyperglycemia, glycosuria, and a lowered amount of glycogen in the liver are stated to have been observed. In his report to the Twenty-fourth Congress of Surgeons, GIRGOLAV called attention to a carbohydrate impoverishment of the organism seen in persons suffering from frostbite.

It is furthermore known that repeated exposure specifically sensitizes some individuals to the effects of cold, so that a series of exposures may produce more serious local injury to the tissues. If one considers the similarities with the allergic state (and the tissue hyperergy** which arises therefrom), it appears from the finding of various authors (AL'PERN and his associates, MATUSIS) that in this case too a disturbed carbohydrate metabolism and particularly hyperlactacidemia have an evident place.

We attempted both to establish the reliability of these findings and to throw some light on the effects of an already developed frostbite condition on the carbohydrate metabolism, a question which is not without interest from the point of view of proper nutrition and the selection of a diet for patients of this category.

Our researches were made on patients with acute frostbite (of the third degree according to the old classification) but without additional complications (infection).

* Read at a Technical conference at Evac. Hosp. No. 2010 on the 24th of May, 1940, and at the Leningrad conference of evacuation hospital and special-ward workers, May 26th, 1940

** Hyperergy – defined as a condition of increased functional power (Tr.)

Fig. 1. Blood-sugar (on empty stomach) in mg-% in frostbite cases

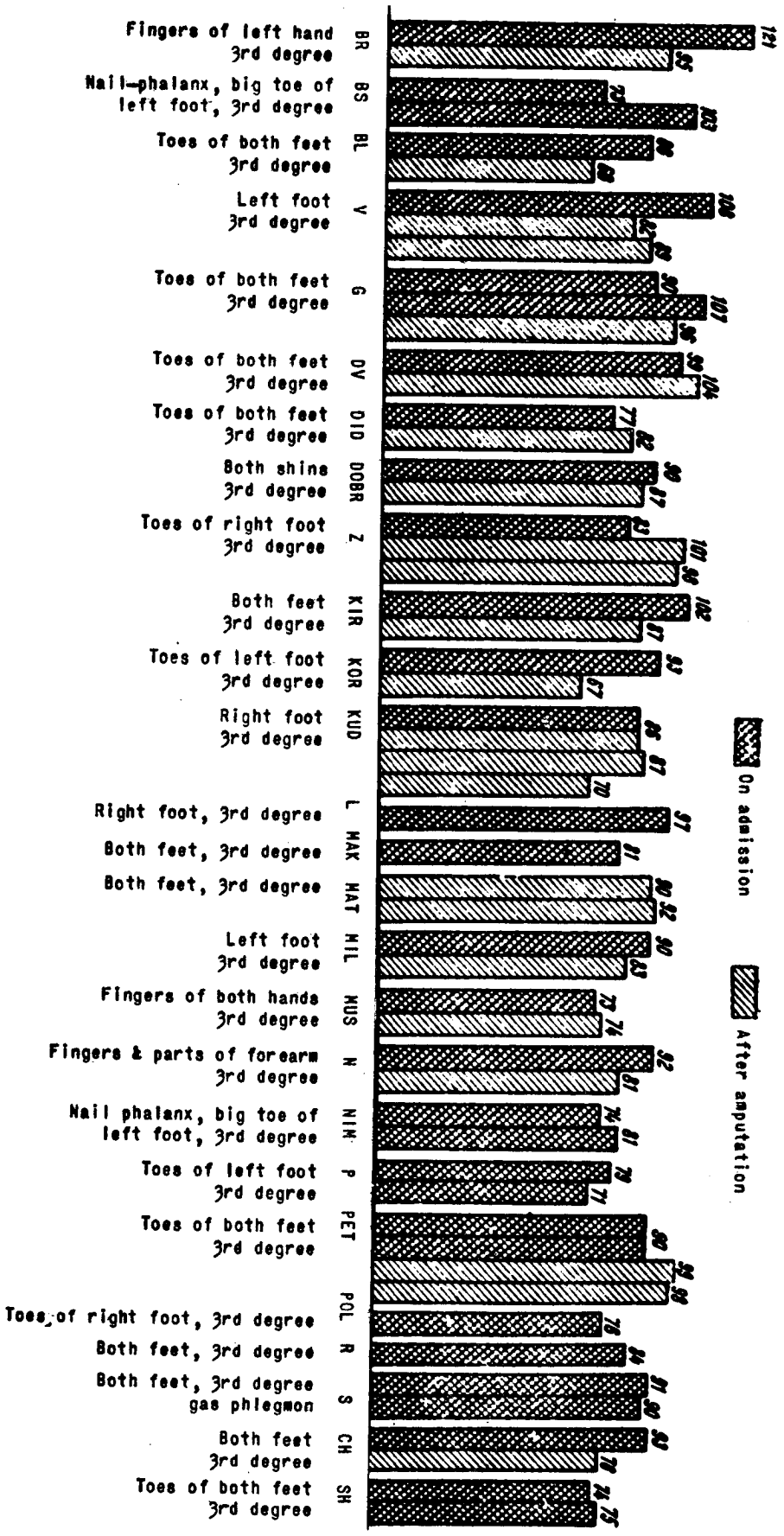
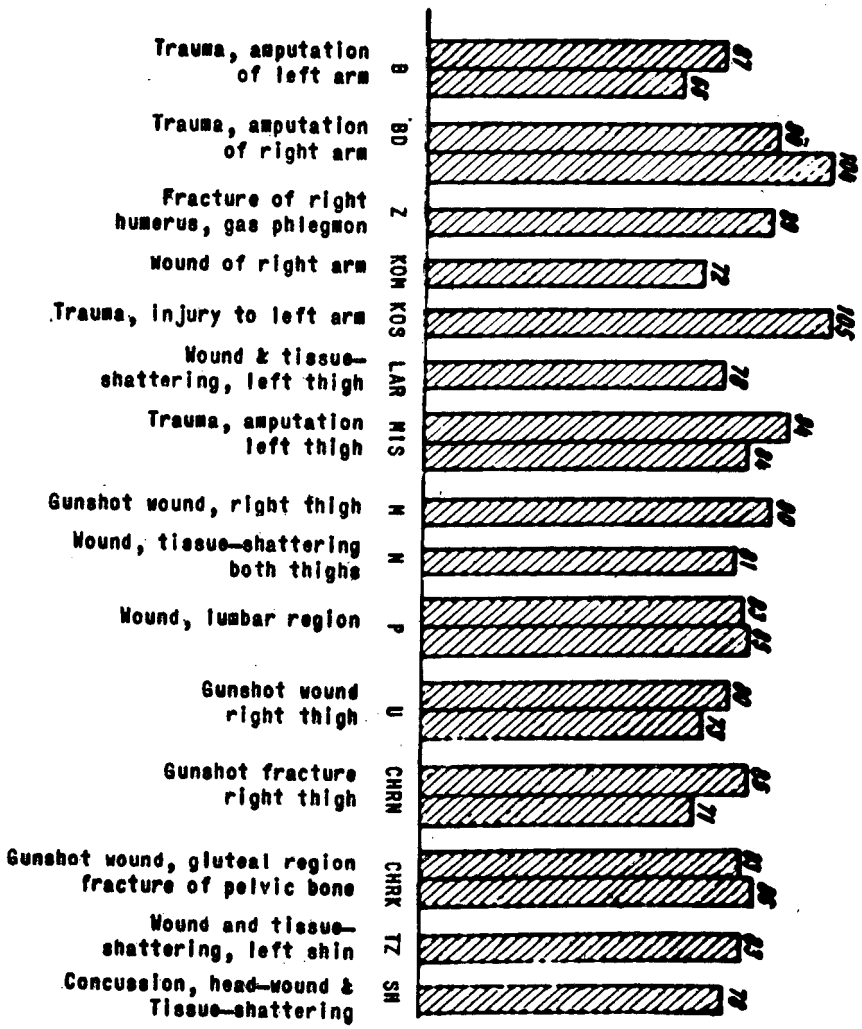


Fig. 2. Blood-sugar (on empty stomach) in wound-patients



Blood-sugar (on an empty stomach) and urine tests were made at some time during the first few days after admission to hospital, and repeated at different intervals during the course of treatment. In a number of cases the blood-sugar level was determined (by the HAGEDORN and JENSEN Method) immediately before dosing the patient with sugar (100 gm of glucose or galactose per os) and then after 15, 30, 45, 60, 90, 120, and 180 minutes had elapsed. The lactic acid content in blood from the ulnar vein was determined by the method of FRIEDEMAN, COTONIO and SCHÄFER, as modified by VLADIMIROV, DMITRIEV and URINSON. To establish the extent to which our findings were specific for frostbite patients, similar control tests (blood sugar and urine, sugar tolerance) were made on other patients not suffering from frostbite (various wound cases).

As will be seen from fig. 1, we not only found no hyperglycemia in frostbite patients during the first few days after admission, but on the contrary there was a clear tendency for the blood-sugar figure to be low. Only in four cases (see fig.1) did the blood-sugar at the time of arrival exceed 100 mg % and then the excess was slight. Moreover it was easily seen that the tendency to a low level of glycemia persisted stubbornly in these patients. This appeared from repeated tests over a period of two to three months on those patients in whom, in spite of a general improvement in their condition (after operation and physiotherapeutic treatment), the blood sugar figure remained lower than normal. Generally speaking, in tests on frostbite patients at various times during their stay in hospital, we found in 87.3% figures less than 100 mg-%, in 10.9% figures from 100 to 110 mg-%, and only in one case 121 mg-%.

Our control tests (fig.2) showed that in other patients too (with no frostbite) relatively low blood-sugar figures obtained throughout the whole series of tests.

As for sugar tolerance, frostbite patients really showed no marked pathological deviations from the alimentary glycemic curve.

The only noticeable point was that in some cases only (patients Z., D., Br., M., L.) there was a relatively small maximum rise in blood-sugar content following a tolerance-dose. Repeated dosing of the same patient during the first few days after frostbite developed and two or three months later showed no significant differences in the blood-sugar curves. For the most part, similar glycemic curves were obtained from patients with no frostbite (patients M., K., P.).*

As for the content of lactic acid in the blood, its level in our tests on frostbite patients usually did not exceed the upper boundaries of the norm (12 - 13 - 16 mg-%). In repeated urine analyses and in particular after sugar dosing, sugar in the urine was in no case detected. Thus our tests show that there are no pathological abnormalities in the carbohydrate metabolism in frostbite (whether in the sugar and lactic acid content of the blood, or in the

* The initials given here do not quite coincide with those in Figs. 1 and 2. (Tr.).

alimentary glycemic curve; neither is there sugar in the urine).

We had no opportunity to investigate the carbohydrate metabolism at the time of exposure to cold, but in any case we may say that patients a few days after contracting frostbite show rather low blood-sugar figures (near the lower boundary of the norm) and a somewhat increased tolerance for carbohydrates. But there is no necessity to consider even these pecularities as specific for frostbite.

On comparing our data for frostbite patients with those for wound patients, we note eccentricities common to both these groups. For this reason it is natural to suppose that there are, in both groups of patients, certain common factors basically concerned in the noticeable and comparatively persistent lowering of the blood-sugar and the slight increase in carbohydrate tolerance.

It appears most reasonable to connect these phenomena with physical strain prior to admission to hospital and to some extent with the local injuries observed in the cases studied. Our data do not permit us to study the dynamics of carbohydrate metabolism at the time of the actual exposure to cold. For this we must have recourse to experimental research. Nevertheless the data obtained are sufficient for us to recommend the feeding of carbohydrates to patients with frostbite.

CONCLUSIONS

1. The development of frostbite is not accompanied by any marked disturbance of the carbohydrate metabolism (as far as glycemic level, lactacidemia, and the glycemic curve are concerned; neither is there glycosuria).

2. The relatively low blood-sugar figures and the slightly increased carbohydrate tolerance as seen in a number of frostbite patients are not specific for this condition.

3. A carbohydrate-rich diet may be recommended for frostbite patients.

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CONTRIBUTION TO THE PROBLEM OF THE PATHOGENESIS OF FROSTBITE

(The role of local disturbances of the blood circulation.)

Report #1

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For a comparatively long time now, many authors have been directing attention to the real importance of circulatory disturbances, particularly those of a local nature, in the mechanism of the development of frostbite (KRIEGE, MARCHAND et al.). The hypothesis has been advanced that this factor plays an important role in the varying susceptibility to frostbite injury which is seen in different individuals under practically identical conditions of exposure to low temperatures (in war and in competitive sports); likewise that it plays an important role in the selective involvement of different parts of the organism (WIETING, HEFDING, ZUCKERKANDL, NÜGELSBACH, GIRGOLAV, ARYEV, GOL'DMAN et al.). GIRGOLAV, basing himself on data in the literature and on his own clinical observations, emphasized in his report to twenty-fourth Congress of Surgeons that necrosis of the tissues in frostbite is (to a considerable extent or completely) bound up with disturbances in the functioning of the blood-vessels, and appears secondarily. At the same time however other authors (LAKE, SACHS) are inclined to ascribe the principal role in the pathogenesis of frostbite to the direct action of cold on cells and tissue.

In the various researches, little has been done to shed light on the question of the significance of local circulatory derangements in frostbite. What work has been done has involved the study of either

> the state of the vascular system at a stage subsequent to the appearance of the changes which are caused by the local action of cold or the local action of fluids and substances with low boiling points (ether, carbon dioxide, ethyl chloride etc.),
>
> or
>
> the influence on frostbite of a disturbed vascular innervation in some particular region.

In our researches we undertook the task of clarifying, by experiments on animals, the manner in which various types of local circulatory derangement are manifested in the incidence and development of frostbite, and also the part played

by these derangements in its pathogenesis. It seemed to us that a clarification of these points would make it easier to understand the causes of selective frostbite injury as related to the individual and as related to the various organs and parts of the body; likewise the part played therein by the local, peripheral blood circulation.

First of all we were faced with the problem of inducing experimental frostbite. For this purpose some research-workers have been making use of local applications of freezing mixtures, fluids and substances with a low boiling point; others have been placing the various parts of the animal's body (limbs, ears) in specially constructed chambers in which chilled air was circulated (viz. the cold-chambers constructed at Prof. GIRGOLAV's clinic and at the S.M. KIROV Skin Clinic of the Red Army Academy of Military Medicine). For our experiments these procedures did not seem to be completely acceptable, since they are far removed from the conditions usual to frostbite in humans (in some of the above-mentioned procedures only limited portions of the body were subjected to cooling; when the chamber was used it was necessary to immobilize the animal and this affects the blood circulation; usually the effects of cold were studied without taking into account the simultaneous action of other weather-factors on the organism (dampness, wind, etc.)

Hence we undertook to induce frostbite experimentally in such a way as to make use only of natural environmental agencies.

> The rabbits were placed in cages outdoors (the tests were made during the winter months) for a set number of hours (in some cases, repeated exposures). In some of the rabbits, local anemia was induced before they were put out in the cold. To do this, the rabbit's ear (near to the root) was put between the two halves of a cork with grooves corresponding to the course of the veins. The two halves of the cork were held pressed together with a fine rubber band. This reduced the supply of blood to the ear without interfering with the return flow of blood. (The pressure was not enough to cut off the flow of blood along the artery completely).
>
> In another group of tests, venous congestion was induced by similar means, the cork in this case having grooves to correspond with the arteries, which thus remained unimpeded. After completing the test (when the rabbits were returned to a warm room) the corks were removed. Local anemia or venous congestion was induced only in one ear at a time, so that the other, which was likewise exposed to the surrounding air but without any interference to its local circulation, could serve as a natural control. As an additional control we used rabbits which were simultaneously put outdoors but which did not have the bloodvessels constricted; also rabbits which had the vessels (arteries or veins) constricted but which were left for an identical number of hours indoors (four hours, some as much as 24 hours). In the latter case the intention was to keep tab on changes which might be produced by vascular constriction alone.

Data were systematically compiled relative to the general condition of the rabbits (there were 32 rabbits used in the experiments) and the local changes taking place in the ears. With some of the rabbits, readings of the general body temperature were taken during the time they were outdoors. At fixed intervals of time, bits were clipped from each ear (constricted ear and control ear) for microscopic examination; each time this was repeated, the clipping was taken at a set distance from the place where the specimen for the previous test was taken. The clippings were fixed with 10% formalin, also with Bouin's fluid, and were stained with hematoxylin-eosine and by Van Gieson's method.

First group of tests. Single exposure of rabbits with local anemia induced in ear. In this group of tests, local anemia was induced in one ear of each rabbit by the means described above, and immediately after this the animals were put outdoors for a single exposure of sometimes two hours, sometimes three to four hours (at air temperatures -23, -20, -18, -17°C.). In all, ten such tests were carried out. The general condition of the rabbits during the tests was not distinguishable in any way from normal.

The changes produced in the ear with the constricted artery (the anemic ear) and those produced in the control ear are completely different. By the time the rabbits are taken indoors the ear with the constricted artery is hard to the touch and very cold (as measured with a "frigorimetric" pyrometer constructed in the form described by ARYEV). Its temperature may go down to -1, -2, -3°C. It is of a dark red color, particularly about the edges. A few minutes after the rabbit is brought indoors and the constrictor removed, the ear is already becoming soft, warmer than normal, and drooping. The other, the control ear, is cold to the touch, but it is soft all the while and its tone is normal.

Subsequently in the anemic ear a growing cyanosis and edema is noticed, which assumes considerable proportions, particularly during the first two or three days, and mostly on the edges and in the upper third of the ear. Meanwhile the ear continues to hang down and is colder than normal to the touch. In two or three days' time it usually develops blisters, particularly on the inner surface (thin-walled, small blisters, often confluent; in some cases large blisters occupying a considerable portion of the ear surface), with a slightly turbid, sometimes hemorrhagic content. Usually in five or six days there develop, along with the edema, darker areas of necrotic tissue with a dark brown color (symptoms of moist and dry gangrene); at places where blisters had burst there is an ulcerous surface. Nearer to the root, symptoms of cyanosis and edema persist, and there is a slight induration along the edges. After ten or twelve days the boundaries of regions of necrotic tissue may be clearly distinguished (predominantly in the upper third of the ear); in the remaining part of the ear a dilation of the vessels is seen. The ear assumes its normal position. In the control-ear no macroscopically visible pathologic deviations are observed after a single exposure to cold.

When the anemic ear immediately after a three-hour exposure is examined microscopically, the epithelium, the root-bulbs of the hair, and the

sebaceous glands are found to be unchanged. There is a little edema of the subcutaneous cellular tissue and the lower layers of the corium. The lumina of the arteries are narrow, their walls slightly thickened, the muscular envelope here and there homogenized. The veins are acutely dilated, engorged with blood, and in places there are signs of a marginal stasis of leucocytes.

Twenty-four hours after a single cooling the stratum corneum of the epidermis is somewhat swollen, the structure of the cells of the surface layer of the epithelium is no longer distinct, and the intercellular boundaries are somewhat blurred. Scattered lumps of chromatin are seen here, which take a weak nuclear stain. At places in the prickle-cell layer are many epithelial cells with vacuolated nuclei. The epithelium of the basal layer is for the most part little changed, containing succulent cells with large nuclei, in which various mitosis-patterns may be seen. In the cells of the hair-bulbs and sebaceous glands there are dystrophic changes (cell nuclei take stain badly, protoplasm homogenized, cell structure not properly distinguishable). The collagen fibres of the deep and surface layers of the corium are somewhat swollen, thickened and separated by a large accumulation of edematous fluid which here and there contains numerous erythrocytes, granular leucocytes and a variety of stray cells. At places, in both the subcutaneous cellular tissue and the corium, small recent hemorrhagic foci are seen. The capillaries and veins are considerably dilated, with their lumina engorged with blood. Quite often symptoms of marginal stasis of leucocytes are found. In numerous places there is diapedesis of erythrocytes. The muscular walls of the larger arteries are for the most part homogenized, in places showing a granular structureless mass, staining strongly to a pink color with eosine. The internal elastic lamina is broken in places, the endothelium intact. Around such vessels one may often find both hemorrhagic foci and an accumulation of edematous fluid.

Two or three days after a single exposure the superficial and sometimes the deeper layers of the epidermis are forced apart by a large amount of fluid (fig.1). The cavities formed contain serous fluid, in which a good number of granular leucocytes are found. In places the epidermis is exfoliated, and here the exposed surface of the edematous corium is seen. The collagen fibres of the elastic tissue are thickened and swollen, with no marked cellular reaction. The walls of the larger arteries therein are homogenized. In the lumina of various veins are found accumulations of granular masses laced through with leucocytes (commencement of thrombus-formation). The larger veins are dilated.

Microscopic examination of the control-ears (those taken from the same rabbits after exposure to cold; the ears in which no anemia had been induced) after twenty-four hours had elapsed showed no signs of change on the part of the epithelium, corium, subcutaneous cellular tissue, cartilage, nor blood-vessels.

In a number of tests made after a single exposure at temperature somewhat higher than in those described above (-10, -8, -6°C), we found that after the rabbits had remained outdoors for four hours the ears with the artery constricted showed, immediately after the rabbits were brought indoors, symtoms of edema, cyanosis, and a strong tendency of the ear to droop (the ear temperature varied from +7° to +2°C). The edema and cyanosis increased, usually for two days, and then began to diminish. After five or six days

fig. 1. Sloughing of the epidermis. Large cavities filled with edematous fluid Edema and necrosis of the derma.

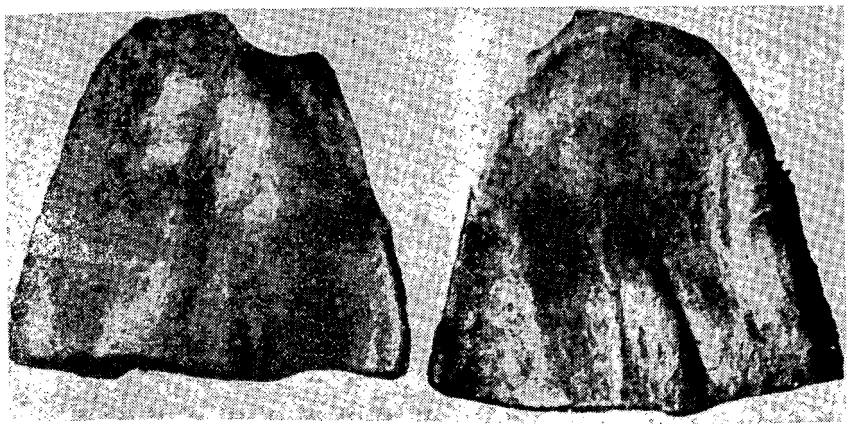

Fig.2. Left, ear with artery constricted and exposed to cold. Large blisters covering a great part of the ear-surface. Right, the control-ear (not constricted) of the same rabbit.

Fig.3. Edematous infiltration. of the epidermis. Edema of the derma and subscutaneous cellular tissue. Homogenization of the arterial walls. Purulent perichondritis.

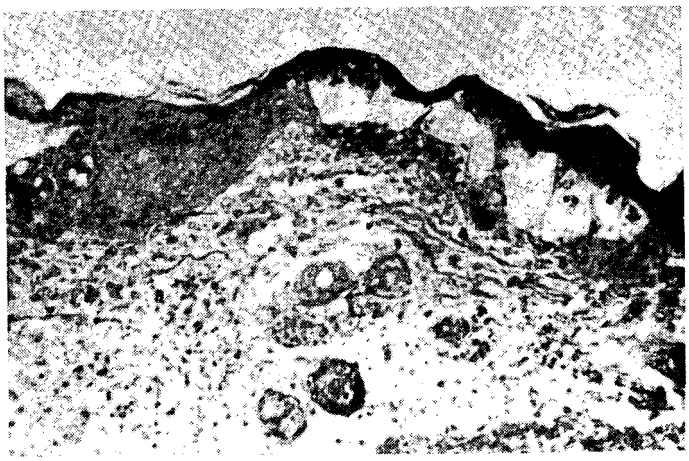

Fig.4. Layers of epidermis separated by edematous fluid ("micro-blisters")

the ear recovered its normal appearance. The ear to which no compression had been applied showed no noticeable changes.

In this case then, in contrast to the preceding tests, the anemic ear presented us with the symptoms of first degree frostbite.

In the following group of tests the rabbits were subjected to cooling at a low temperature (from -12 to -5°C) for a space of some days. Here we tried to bring out the effects of a second and not so severe cooling under conditions of an already existing local circulatory change.

Second group of tests. Repeated exposure of rabbits with local anemia in the ear. First, local anemia was induced. For a period of four hours the rabbits remained outdoors (at temperature -12, -10, -8, -6, -5°C), and then were taken into a warm room where the corks were removed. This procedure was repeated one, two, three or four times during the following days.

After a single stay in the cold, we observed in the anemic ear an initial pallor which comparatively soon changed to cyanosis and edema; the ear was held in a drooped position. After a second or third exposure (at more or less the same atmospheric temperature) the ear was usually hard, markedly edematous, and of a dark reddish color when the rabbit was brought indoors. The rabbits were then left in the warm room (with no further cooling). They developed an increasing edema, blisters (for the most part small and confluent; in some tests large blisters covering a third of the ear --- see fig.2), ulceration, necrosis, and sloughing of the epidermis. The control-ear remained without noticeable changes throughout the whole test.

Under microscopic examination the anemic ears in this group of tests most frequently developed the following picture:-The superficial layers of the epithelium are separated by edematous fluid, in which granular leucocytes are found. In places the epidermis is exfoliated or loosely bound to the underlying layers of the corium. In some cases, there is a very complete necrosis of the epithelium, with sloughing thereof and necrosis of the corium and subcutaneous cellular tissue. On the boundary of such regions the collagen fibres are saturated with edematous fluid and large accumulations of granular leucocytes. Here, what looks like delimitation or demarcation of the necrotic masses is in process. In the surrounding tissue cartilages, on the inner side of the ear, there is a broad layer of inflammatory infiltration consisting of granular leucocytes (perichondritis). In the demarcation zone the arterial walls are thickened, their muscular envelope homogenized (fig.3), and some veins are thrombosed.

Clinical observations long ago revealed the important role of dampness in the etiology of frostbite. Among the factors which favor the incidence and development of this process, contact with very cold objects (particularly metal objects) has been mentioned. Taking this as a lead, we made a series of tests on rabbits with the artery constricted, during which we from time to time moistened the ear with water or damp snow while the animals were out in the cold; in other tests we applied a metal spatula to the ear. When this was done, at various temperatures of the surrounding air (from -23 to -10°C), we observed a very acutely developed frostbite picture (ear hardened, blisters already developing by the second day after the exposure, and so forth).

Twenty-four hours after a single exposure to cold with the above-mentioned agents applied, microscopic examination showed the following changes:- The superficial layers of the epithelium present a cavitated appearance because of the separation of the granular and horny layers ("micro-blisters"). The cavities are filled with edematous fluid, in which a small number of granular leucocytes are found (fig.4). The cellular components of the basal layer have a dystrophic look (vacuolation, karyolysis of the nuclei). Other than this, the changes in the corium and blood vessels are similar to those described in the case of the single exposure at lower temperatures.

The experiments detailed above demonstrate the great influence of diminished blood supply (local anemia) as a factor promoting the development of frostbite under the action of cold. In the following tests we endeavored to reveal how the incidence and course of the involvement is affected by another kind of circulatory derangement, namely congestive hyperemia.

Third group of tests. Single and repeated exposure of rabbits with congestive hyperemia of the ear. Congestive hyperemia was induced in a rabbit's ear by the method described above. Then the rabbit was put outdoors for a single period of two, four, and ten days, at a circumambient air temperature of from -10 to -23°C. In these tests, with both the single and the repeated exposures, the ear having the veins constricted was soft and cold to the touch when the animals were brought indoors, and differed from the control-ear only in a noticeable cyanosis and slight symptoms of edema. Very soon after taking off the cork the test-ear showed a noticeable dilation of the blood-vessels and became somewhat warmer to the touch than the control-ear. The cyanosis and edema were maintained for some days even after cessation of further exposures to cold, but we saw no other signs of frostbite, such as blisters, necrosis, etc. The control-ears (those with no congestive hyperemia) showed no particular pathological changes.

Where congestive hyperemia has been induced, the epithelium, hair-bulbs and sebaceous glands show no noticeable changes under the microscope. There is a slight edema of the corium and subcutaneous cellular tissue. The walls of the larger veins are modified in places; their structure is indistinct, granular decomposition is present; the majority of the fine veins have dilated lumina and contain a homogenous mass of plasma. Individual fine arteries are seen which have their lumina filled with thrombotic masses. The walls of the larger arteries show no noticeable changes.

In this group of tests our attention is particularly attracted to the results obtained with two rabbits (No.301 and No.336). In one of them (rabbit No.336), after repeated exposure to cold (temperatures on successive days were -10, -23, -22, -13, -18, and -22°C) the ear in which congested hyperemia had been induced showed only symptoms of vascular dilation and comparatively slight edema. A few days after the exposures were terminated the ear had recovered its normal tint, and only a slight induration was observed in it, along the edges. A month later this rabbit No.336 was made the subject of a test with exposure to cold under conditions of local anemia (in the same ear). After the second exposure to cold the rabbit had already developed an extreme degree of frostbite (acute cyanosis, edema, numerous blisters both small and large; subsequently ulceration, formation of a scab, necrosis and demarcation). All the upper ear and a part of

the middle third of the ear turned black. In rabbit No.301 the artery in one ear was constricted and the veins in the other ear; under the action of cold, acute symptoms of frostbite developed in the ear with the artificially induced anemia only.

Control tests and supplementary tests. In our cooling experiments, in which exposure to cold was combined with local derangements of the circulation, we used as control an ear of the same rabbit, with the blood circulation left undisturbed in its original state. In addition we decided to make a series of control tests in order to check up on changes which might develop after a single constriction of the ear-artery for a longer period than in our tests (without cooling: the rabbits remained indoors). In this group of experiments we kept track of the effects of single and repeated constriction of the artery in three rabbits for a period of four hours, and in one rabbit for a period of 24 hours.

In the first case the ear, immediately after removing the cork, usually looked cyanotic and was noticeably edematous, mainly in the upper third of its length. Two hours later the ear was quite warm, color normal, edema slight. Next day it was very little different from the normal ear (the one which was not constricted); it drooped slightly; edema was absent. Under microscopic examination the ear, after a four-hour constriction of the artery (immediately after taking off the cork), showed no noticeable changes in the epithelium, hair-bulbs and sebaceous glands. Insignificant edema, mainly of the deep layers of the corium around the cartilage. The lumina of most of the arteries constricted, the structure of their walls distinct; veins somewhat dilated, full of blood. Twenty-four hours after the removal of the constriction the epithelium, hair-bulbs and sebaceous glands showed no noticeable changes. The dermal layer under the epithelium was thin; in the deeper-lying layers of the corium, near to the cartilage, there was quite a wide zone of edema. Here the tissue was diffusely impregnated with edematous fluid, the collagen fibres separated; here and there in the edematous fluid isolated granular leucocytes were seen. No noticeable changes were apparent in the walls of the larger arteries. Lumina of the veins were dilated, with a homogenous mass of plasma to be seen in them.

After a 24-hour uninterrupted constriction of the artery, signs of cyanosis and edema manifested themselves to a quite considerable degree as soon as the constriction was removed. Yet after two days the ear had recovered almost its normal appearance and all that was noticeable was a little droop as compared to the other ear. Under the microscope the surface layers of the epithelium were swollen; here and there in the deeper parts of the prickle-cell layer vacuolation of the nuclei and karyolysis could be distinguished; the cell-boundaries at these points were indistinct. In places, dystrophic changes were seen in the basal layer too. The collagen-fibres and elastic-tissue fibres of the corium were considerably forced apart by edematous fluid. The larger vessels were acutely dilated, engorged with blood; the structure of their walls was indistinct and the muscular envelope in the majority of cases homogenized, staining strongly with eosine. Here and there in the edematous fluid granular leucocytes were seen.

Forty-eight hours after taking off the constriction, binuclear cells and amitotic patterns (symptoms of dystrophy) were found at various points in the prickle-cell and granular layers. The basal layer was engorged with cellular matter, and here and there the patterns of mitosis were found. The corium

is laced with mononucleated polyblastic elements and also fibroblasts. The muscular envelope of the arteries is somewhat thickened and full of cells with large pale nuclei.

Finally we made a series of tests in which rabbits, serving as controls, were exposed to cold with the ear circulation undisturbed; they were left outdoors for four hours (at -23°C or lower). Neither with a single nor with repeated exposure could any frostbite be detected in these rabbits, nor indeed any noticeable damage to the tissues.

In groups I and II of our experiments (cooling plus local anemia) we combined exposure to cold with a disturbed condition of the blood circulation in the ear, and obtained changes which reproduced the typical picture of frostbite, from inflammatory changes to necrosis. Changes of this kind did not develop in control-rabbits subjected to single and repeated exposures to cold (at from -23°C to -5°C). What is more, even when acute frostbite developed in the ear in which local anemia had been induced, such pathological symptoms regularly failed to manifest themselves in the other ear, which was exposed to the same low temperature without the blood-vessels being compressed. Thus our findings bring out with the utmost clarity the enormous significance of local circulatory disturbances in the mechanism of the development of frostbite under the action of low temperature. In our case these disturbances are shown to be an essential condition for the development of frostbite in rabbits' ears.

As may be seen from comparison of groups I, II, and III of the tests, the basic factor here is the restricting or lessening of the flow of blood through the arteries; the type of tissues used in our tests is thereby rendered particularly sensitive to the action of cold. A single exposure at a very low temperature (from -20 to -17°C), or repeated exposures at less severe temperatures (-10, -8, and even -5°C) will cause an anemic ear gradually to develop acute and for the most part irreversible changes; acute cyanosis, edema, blisters (ranging from small ones to blisters covering a considerable portion of the ear), ulceration, necrosis, and demarcation. In the second case it was noticeable that certain of these changes, particularly the edematous symptoms (as observed in our control-animals with constricted arteries but not exposed to general cooling) were distinguished by a much less intensity and comparatively rapid reversibility. This was particularly evident in the ears subjected to a 24-hour constriction, where, 48 hours after taking off the pressure on the artery, we could satisfy ourselves that there were symptoms of regeneration, that the arteries were open, that there was no necrosis, and so forth.

Thus the development of frostbite looks to us, not as if it was an outcome of the direct action of cold on the tissues, but as if it was primarily a consequence of a circulatory derangement which develops in the affected part and lowers the resistance of the tissues. From this point of view, such agents as dampness, very cold objects (which according to our findings hasten the development of frostbite) seem to cause their effects mainly by bringing about either a direct or a reflex constriction of the blood-vessels, under which circumstances the tissues become especially sensitive to the action of cold.

Our attention was particularly drawn to the sharp local decrease which took place, during the time the rabbits were out in the cold, in the temperature of the ear with the artery compressed, while the general body-

temperature (as measured in the rectum) remained normal (38.5 to 40°C) and fluctuated within very small limits in any one rabbit (0.5°C). Without denying the great significance of the general condition of the organism in the incidence, development and course of frostbite, we desire only to emphasize once more the importance of the condition (or more properly speaking, the disturbed condition) of the local blood-circulation in the selective involvement of various parts of the body. This agrees very well with every-day clinical observations, particularly instances of the frequency of involvement of certain parts of the body where conditions favor an above-normal hampering of the local circulation (for instance, if shoes are tight). Consequently it is natural to suppose that frostbite prophylaxis should be based on prevention of anemia in those parts of the body which are most liable to disturbance of the peripheral blood-circulation, and on eliminating mechanical hindrances to the blood supply and any factors promoting direct or reflex spasm of the bloodvessels (for example, dampness). These points should also be given due consideration in personnel selection (particularly in connection with work in the North); persons having a tendency to peripheral spasm (here of course we should include those suffering from endarteritis) should as far as possible not be accepted for work under conditions of very low temperatures and humidity; in any case such persons should protect themselves very carefully from frostbite.

In our second group of tests we in many instances did not obtain any well-expressed frost-bite after the first exposure to cold (at a temperature of -12°C, -10°C and the like); it seemed to be characteristic that it took repeated exposure under these circumstances to induce a distinct frostbite picture, particularly when cooling and moistening of the ear were combined. We shall not dwell here on the undoubtedly real individual peculiarities which exist in rabbits as far as susceptibility to frostbite is concerned (this is mostly a matter of the speed of development of the process). We should merely like to remark that the basic role in the gradual intensification of the symptoms after repeated exposure (likewise protracted exposure) was, in these experiments, NOT played by any specific sensitization to cold, but by a piling up of more and more layers of newly injured tissues which developed as a consequence of the prolonged and combined action of cold and lessened blood-circulation. The changes thus caused undoubtedly proceed until they reach the stage of manifest frostbite. In this connection we should also like to stress our observations re the formation of "micro-blisters", which may be formed even before the development of a macroscopically distinguishable picture of tissue-damage.

CONCLUSIONS

1) Local derangements of the blood circulation play a leading part in the pathogenesis of frostbite. A decrease in the blood-supply (local anemia) markedly increases the susceptibility of the tissues to the action of low temperatures and accelerates the development of frostbite in the regions in question when they are exposed to cold. Venous congestion does not manifest itself so strongly in the development of this process.

2) In the presence of local anemia, repeated and protracted exposure to cold even at moderately low temperatures (even at -5° C) will lead to the development of frostbite in ear-tissue. In this case a really active part is played by the gradual piling up of symptoms (changes in the tissue-structures and lumina of the blood vessels, edema of the tissues, "micro-

blisters") which are macroscopically undetectable, particularly at first.

3) In the prophylaxis of frostbite special attention should be paid to the elimination of factors which favor direct mechanical or /secondary/ reflex constriction of the blood-vessels in the peripheral parts of the body (especially dampness), and also to the consideration of means for maintaining an increased peripheral circulation.

4) In a rabbit's ear, the combination of general cooling and local anemia will reproduce the typical picture of frostbite (beginning with vascular changes and ending with necrosis). The procedure we propose for inducing experimental frostbite is distinguished by its simplicity and in many ways it establishes just the conditions which obtain when humans contract frostbite. The procedure may therefore be used to obtain a fully valid model for experimental work on frostbite problems (particularly those of prophylaxis, experimental therapy, etc.). It may also be used for producing frostbite in other parts of the body /besides the ears/ especially the extremities.

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CONTRIBUTION TO THE QUESTION OF THE CLINICAL ASPECTS OF FROSTBITE.

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In the winter of 1939-40 in the dermatological ward of one of the Leningrad Hospitals, we had the opportunity to keep track of the course of 77 cases of frostbite of the extremities, of a light and medium nature. Except for three or four cases, these were all ambulatory patients. The most serious case had third degree frostbite of all the toes of both feet, with partial involvement of the heel.

As was clearly manifested in the exchange of opinions at the sessions of the PIROGOV society in the spring of 1940, not three but four degrees of frostbite should be distinguished, characterized as follows:---

1) Erythema with subsequent peeling of the epidermis.

2) Blisters with clear serous content, resulting from the necrosis of the whole corium-layer.

3) Dense superficial foci of necrosis, involving both the corium [derma] and a sub-dermal stratum, or sanguineous blisters over which there are always parts of a necrotic sub-dermal stratum showing, of more or less depth.

4) Necrosis extending solidly throughout the whole diameter of the digits or extremities and involving the bone, with subsequent mummification and sloughing thereof.

Our 77 men had frostbite classed as follows: first degree, 1%; second degree, 36%; third degree, 55%; fourth degree, 8%.

There was another form of the action of cold which we happened to encounter in the neurological ward of the hospital. Here, as surgeon-consultant, I was brought in for consultation on cases (51 in all) where trauma of the spine was suspected.

In 20 of these cases the roentegenogram confirmed the existence of trauma. As for the other 31, they formed a group very uniform in anamnesis, symptoms, and clinical course, and we shall describe them in some detail.

In the anamnesis of all this group (31 men) there was general exposure to cold, as a result of lying for some hours on snow, ice or in cold water at an atmospheric temperature below zero. In 19 cases the patients had lain thus in an unconscious condition after shell-blast concussion, and in addition had often been deluged with frozen earth by the explosion. In the other 12 cases a prone position had been necessitated by the proximity of the enemy and by continuous fire. Subsequently the patients, most often immediately after recovering consciousness but sometimes on the following morning, developed such intense pain in the lumbar region that they became incapable of moving or even of turning over, and were sent to rear hospitals, including ours.

We carried out a fact-finding study of these cases with great care.

Some of the patients in this group presented a picture of intense subjective suffering. In one case it required the most attentive and repeated X-ray studies of the spine, the whole thorax and the pelvis before we were able to exclude confidently the possibility of bone-trauma.

Objectively speaking, the general condition of these patients showed little upset: the temperature was as a rule normal (subfebrile for a few days in only two cases); the pulse was not accelerated, regular, and of good volume: the tongue was pink, not coated, moist.

The X-ray showed nothing wrong.

Blood tests: - Sedimentation rate usually in the lower brackets (not higher than 10). Erythrocyte count, hemoglobin percentage and color index within normal limits. There was usually leucopenia, $3\frac{1}{2}$ - 4 - 5 thousand leucocytes per cu. cm., never over 6 thousand. No displacement of the leucocytic /Arneth/ count was observed, or if it was observed it was not very marked, and rather in the sense of an absence of immature and rod-shaped forms, i.e. a shift to the right.

In the urine we almost regularly observed a small amount of erythrocytes, either faded or unmodified (23 cases); there were usually two or three in the field of vision, and in one case 20-30 (patient S., case history No. 886).

In neurological tests no deviation from normal was detected; this compelled the neuropathologist to turn in each case to the surgeon. However, Lasègue's Sign was very often in evidence on both sides, but, as is known, it loses its pathognomonic significance in such cases.

The tendon reflexes, and the abdominal and cremasteric reflexes were lively. No pathological reflexes.

The clinical picture in almost all the cases amounted to the following:-

The patient maintains a constrained, rigid position of the torso, and walks by himself with difficulty, cautiously bending and straightening the legs, hunched over and rolling from side to side like a sailor on deck in a heavy swell.

The mobility of the spine is more or less limited.

The patient is unable to bend forward or straighten up. Side-wise movements of the spine are for the most part relatively free, but they are not infrequently accompanied by a feeling of pain on the side opposite to the direction of inclination: when bending to the right the pain appears in the left half of the lumbar region and vice versa.

Pasternak's Symptom is usually positive on both sides.

No visible deformations are apparent as far as the spine or other parts of the osseovascular system are concerned.

On palpation, our attention was drawn to the tenseness and tenderness of both the longissimi dorsi. Sometimes (in three cases) this was so intense that the patient literally would not allow himself to be touched, and if touched, it provoked a violent uncoordinated motor reaction of all the muscles of the body. Sometimes the tenderness was more acutely in evidence on one side of the lumbar region than on the other, and in this case the more tender of the longissimi dorsi seemed to be somewhat increased in bulk as compared to the other.

Less acute tenderness was also observed in the mm. gastrocnemii, the adductores femoris, the flexor and extensor groups of the thigh, and on percussion of the sacrum and particularly over the articulations of the sacrum with the fifth /lumbar/ vertebra and over the sacro-iliac joints (about 70% of all cases).

More rarely pain was observed on pressing the joints and bones, particularly in the region of the knee and ankle joints, along the whole length of the tibia and the lower metaphysis of the femur.

The muscular pains were sometimes associated with markedly evident muscular contractions causing flexion (to as much as 90°) in the hip and knee joints (5 cases).

The third sign (next to the voluntary splinting and pains) was of a general nature; we were able to satisfy ourselves of its existence in the whole of this group without exception. This was an acute intensification of the mechanical excitability of the muscles. The muscles responded with a sharp contraction to even a light tap with the fingers. Not all the muscles reacted in this manner, but only those affected. Most frequently these were the longissimi dorsi. Then followed in order of diminishing frequency the muscles of the calf, the flexor group of the thigh, the m. quadriceps femoris, the adductores femoris, the gluteal muscles, m. latissimus dorsi (2 cases) and mm. recti abdominis (2 cases). In one marked case nearly all the muscles

of the body, except the small muscles of the face and hand, gave a picture of acutely intensified mechanical excitability.

In two cases the men had spent some hours lying on their stomachs in cold shallow water.

In their cases the excitability and tenseness of the recti abdominis muscles was so acutely in evidence that it was not a simple task for the surgeon to differentiate them by means of the défense musculaire in the ventral region /abdominal reflexes/.

Thus the three main clinical signs in this group of patients were the following:---

1. A decrease in the limit of extensibility of certain transverse muscles, because of pain in them when stretched; almost a spastic condition. This muscular condition resulted in a constrained attitude of the torso, Lasègue's Sign, and contractures. When the m. quadriceps femoris was involved (5 cases), we noticed the following indicative symptom: with the patient lying on his stomach and the leg bent (by the physician) at the knee-joint, the hip-joint of the same limb would also bend; this region, that is, the corresponding half of the pelvis, would noticeably lift, with the lumbar part of the spine forming a lordosis. This becomes understandable when we remember that the quadriceps femoris is a muscle which spans two joints and it could protect itself from painful overextension only by bending the hip joint.

2. Tenderness in certain muscles upon pressure, percussion, and palpation.

3. Heightened mechanical excitability of the muscles.

In the cases described we undoubtedly had to do with acute muscular lumbago or acute "fibromyositis", as Prof. ASTVACSATUROV has recently been proposing that it should be called. But a diagnosis of "lumbago" or "fibromyositis" gave no real idea of the nature of the ailment nor of its etiology; it did nothing to explain the causes of the pain. Hence it satisfied neither myself nor the neuropathologists of the hospital. We decided to set our course by the anamnesis of these cases: we began to look upon the whole symptom-complex of this group of 31 patients as a direct effect of an acute general cooling of the organism.

In our repeated and persistent examinations, the patients themselves declared with complete conviction "I simply got a bad chill."

As everyone knows, "chills" at the present time are not regarded as an independent nosological entity. The majority of authors do not even ascribe an etiological significance to them in lumbago (SCHMIDT and ERBEN, KROL', MARGOULIS and PROPPER, WEINHARDT et alii). Prof. ZAKHARCHENKO in his course on the nervous diseases makes no mention whatever of lumbago, nor of myalgias in general. An in exactly the same manner he leaves no place for the effect of cold in the etiology of the neuralgias. ASTVACSATUROV,

SHAMBUROV et alii see in myalgias, especially lumbar myalgias, a group of ailments of quite diverse type, of which the so-called "fibromyositis" is merely one. This fibromyositis is most often the result of infection or trauma; as far as cold is concerned, it has significance only as a kind of "predisposing" factor.

"The etiology of the myalgias," writes ASTVACSATUROV "has not been fully explained and may be dissimilar in the various cases which have been included in this group. The most important role must, it seems, be ascribed to the effect of low temperatures, particularly in combination with dampness and auto-intoxications."

SHAMBUROV says that the severe chill often mentioned by the patients as having preceded their illness must be regarded as a predisposing phenomenon, assisting the action of toxins and infections. However the possibility is not excluded that overcooling of the muscles, by disturbing the blood circulation and metabolism in them, may cause the muscular pains.

MENSCHEL observed a complex of reversible phenomena in human muscle which he called "cold numbness"; these phenomena were pain, hardening of the muscle, reduction of its working efficiency, and change in its electrical excitability.

However, we are still unable to explain certain facts; if over-cooling may provoke a whole series of local autonomic* derangements in the extremities, why then should similar derangements not appear in the muscles and other tissues of the body as a result of exposure to low temperatures? And if overheating is capable of producing a general pathological condition, known to us under the name of "heat stroke", then why should some king of similar condition not be produced by such a powerful agent as overcooling?

On the basis of this reasoning, I began to give, in the cases of the above mentioned group of patients, such diagnoses as "general overcooling of the organism (pernio communis)" or "myalgia of such-and-such muscles (as enumerated) as a result of general overcooling" or more simply "a myalgic (muscular, osseomuscular) form of overcooling."

I diagnosed the whole group of 31 men in this way, and the neuropathologists of the hospital were on the whole disposed to agree with my thesis.

What was new in this was not only the term "pernio communis" but the idea that the observed myalgias should be regarded as the direct, nosologically specific effect of overcooling, whereas the majority of contemporary authors, it seems to me, are inclined to underrate the effect of cold, giving it at the most the role of a predisposing factor. Under peacetime conditions it is only very rarely that victims of overcooling come to the clinic during the first few days of their illness; usually they are all classed under the usual diagnosis of "lumbago."

The 31 patients with "overcooling of myalgic form" like all our

* Lit. vegetative. (Tr.).

other patients were admitted to our hospital on the third to sixth day after the start of their illness, with fully developed symptoms. Their treatment lasted from 5 to 22 days, after which they were evacuated, almost without exception either much improved or nearly restored to normal. Treatment consisted of water baths (in some cases only), sun-bathing and quartz-lamp irradiation (in 100% of the cases), and d'Arsonvalization applied to the lumbar region (about 50% of the cases).

Meanwhile my attention was drawn to the surprising fact that among the first and second groups of patients suffering from the effects of cold, there were no cases of mixed or transitional form. Whereas in the first group (77 patients) we had to do with frostbite of surgical form, that is, with cases of limited local areas of necrosis, no myalgias were found among them. In the second group on the contrary (31 cases) we were faced with myalgias exclusively and found no necrotic areas.

This incompatibility of the necrotic and myalgic forms of overcooling was an outstanding fact.

To test this out, I made another systematic examination of both groups on the 5th of January 1940. It revealed the following points.

In the first group of 77 men with second, third and fourth degree frostbite, only four of them (case-histories #81, #157, #123, #138) complained of slight, ill-defined pains in the lumbar region and the calf-muscles. These pains were so insignificant that except for my direct questioning the patient would not have mentioned them. Sometimes they were accompanied by nocturnal cramps in the calf-muscles. In no case were objective pathological symptoms discovered as far as the muscles were concerned. The mechanical excitability of the muscles was not intensified. The leucocyte count in the four cases was between 8200 (patient A., case-history #138) and 11,600 (patient K., case-history #157). Sedimentation rate, leucocytic (Arneth) count and urine showed no deviations from normal. Lasègue's and Pasternak's Signs were absent.

In the second --- the myalgic --- group (31 men), only one had shown traces of first degree frostbite in both feet (blanching and an inconsiderable amount of swelling of the toes, which had disappeared by the time of my examination --- Jan. 5th.)

This patient (K., case-history #619) had been knocked out by blast on the 28th of December and had lain for some hours unconscious in the snow. In the anamnesis there was chronic rheumatic polyarthritis with recurrent exacerbations, for one of which he had already been hospitalized for one period of two months. On January 5th 1940 his temperature and blood and urine data were within normal limits. He complained of pain in the lumbar region, pains in the thigh-bones when walking, and more strongly still in the bones of the calf and the knee and ankle joints on both sides, with which however there was nothing objectively wrong. Upon palpation there was pain and intensified muscular excitability in the longissimi dorsi, the knee-flexors and calf-muscles on both sides. Pasternak's Symptom -, -; Lasègue's Sign -, -. He walked with difficulty. Under heat-treatment and

quartz-lamp irradiation of the lumbar area, he gradually recovered during a period of two weeks from the time he was affected.

Three other patients of this (second) group complained of pains in the digits of the hands and feet, of a "pernio" nature.

It should be mentioned that about 20% of the patients of the second (myalgic) group had different forms of "rheumatism" in the anamnesis, which perhaps had sensitized them to cold.

Thus my repeated examination of both groups left no doubt that the myalgic and necrotic forms of overcooling are incompatible in one and the same patient. We saw either patients with surgical frostbite or patients with myalgias, but never with the two together. In conversations with surgeons of other hospitals I obtained confirmation of this fact. They could not remember a single case of even the more serious forms of frostbite where the patient complained of muscular pains.

I have found no mention of this fact in any of the literature available to me.

So far, we are unable to explain this curcumstance. It may be that the way each individual was protected or unprotected against the cold has something to do with it: that is, how he was clothed. In those cases where the extremities were well shielded from the cold, a general over-cooling of the whole organism took place first and produced the myalgic type of involvement. If the extremities were poorly protected, they suffered necrotic injuries before general over-cooling had time to occur and brought the patient into hospital with only frostbite of the surgical type. Yet on the other hand I know of cases of very grave fourth degree frostbite of the extremities, where inevitably a general over-cooling of the body must have developed, but nevertheless myalgia did not appear.

We may perhaps imagine that the presence of necrotic foci in patients of the nerve* group could act to suppress muscular pains and contractures in the same manner as we have seen in the work of Docent G.F. SKOSOGORENKO (Kiev Orthopedic Institute).

CONCLUSIONS

1. Apparently the known surgical form of frostbite is not the sole direct effect of the action of cold on the human organism. In addition it is necessary to distinguish at least one other form of cold-action, namely the myalgic form. We should distinguish the form characterized by local action ("otmorozheniye" --- frostbite) from the form characterized by general action ("obmorozheniye" --- congelation); we must distinguish the surgical form from the neurological form; the necrotic form from the myalgic form. Incidentally the second (the myalgic) form is just as much the direct effect of the pathogenic agent (cold) as is the necrotic form.

We say this, not as an assertion, but as a hypothesis.

* Misprint for "second"? (Tr.).

2. If we accept this hypothesis as a guide, then we may well pay heed to the newly discovered fact, hitherto not mentioned in scientific literature and for the present inexplicable, of the incompatibility of both forms of cooling in one and the same patient. This fact is of the nature of a general rule, which is clearly evident in group-studies of patients in different wards, mainly the surgical and neurological.

3. If the assumption of the possible existence of a specific myalgic form of overcooling is not mistaken, then it should have its own nosological designation. We suggest that it be called "pernio communis" or "cryomyalgia", since the old names "lumbago" or "fibromyositis" have no etiological reference. We have to date been unable to discover any other more adequate term.

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FROSTBITE CLINICAL DATA AND TREATMENT

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According to the findings of PIROGOV, LARREY, SCHADE, KUPRIANOV et al., frostbite cases account for a considerable percentage of the sick and wounded, both in forces in action and on the march; they occupy an important place in the picture of military field surgery and for that reason regularly attract the attention of research workers.

In the Soviet Union, work on this problem is being done by Academician N.N.BURDENKO (1), A.V.VISHNEVSKI (2), LEVIT (3), FRENKEL (4), GOL'DMAN and LUBO (5) et al.; the leading place in the study of frostbite is held by that most deserving and active scientific worker S.S.GIRGOLAV (6) and his pupils ARYEV (7), SHEINIS (8), GAMOV (9) et al. The researches of GIRGOLAV and his school in this field have yielded much that is new in the pathogenesis, clinical handling and treatment of frostbite. Under the conditions of the Great Fatherland War the immediate importance of the question has grown: proper acquaintance therewith and proper attention thereto is demanded of all surgeons in the battle area and in rear establishments.

We have been carrying out studies on groups of patients suffering from the effects of exposure to cold under severe winter conditions.

All our patients were men, of ages for the most part between 20 and 30 years.

The extent of the involvement, according to the ARYEV-GIRGOLAV classification, was as follows:- first degree frostbite 3.8%, second degree frostbite 39.6%, third degree frostbite 31.9%, and fourth degree frostbite 24.7%. The percentage of first degree frostbite cases was in reality much larger, but they were treated as ambulatory patients, and only those were sent to us who had deep-lying frostbite of the tissues, i.e. second, third and fourth degree cases; only occasionally those of the first degree. Of the patients, 1.6% were admitted within the first 24 hours after being affected, 73.6% during the second 24 hours or later.

The clinical picture of frostbite is the end result a number of etiological and pathogenic factors of sometimes very diverse nature, and it is always highly polymorphic. Of the various systems of frostbite classification, the best is that of ARYEV and GIRGOLAV. This classification dis-

tinguishes four degrees of frostbite. In our everyday practical work we have been using this classification systematically; we found it to be correctly oriented as far as diagnostic requirements were concerned.

Most frequently frostbitten were the toes and the feet, with the right side of the body considerably more often affected than the left. The inequality of the involvement as between the two feet may be explained by inequality of size in footwear.* Our attention was also drawn to the comparative frequency of frostbite of the ears; here the involvement was total, usually of the second degree, and was usually suffered while going around without a helmet-liner. Involvements of the cheeks and nose were considerably more than our figures show, but these cases very seldom came to us. These cheek and nose involvements were for the most part localized, with first and second degree frostbite predominating. Finally there was one case which was interesting because of its site, namely a second degree frostbite of the abdominal wall. In this case the frostbite was contracted as a result of being obliged to stay in an immobile position on an open auto-vehicle in motion.

Among the initial clinical symptoms, mention should be made of pain, which in 30.8% of our patients developed during the first 24 hours, in 10.45% on the second day, in 4.9% on the third day, and in 3.3% on the fourth day. The absence of pain in the remaining cases may be explained by the early appearance of trophoneurogenic symptoms, a circumstance which doubtless promoted the development of frostbite in the deeper-lying areas and tissues. In 47.8% of the patients, pain was absent during the first five days. Marked pallor of the frostbitten portions during the first 24 hours was noticed only in 19.25%; in the remaining 80.75% this early pathognomonic symptom was not seen. Cyanosis and rubor of the frostbitten members was seen during the first 24 hours in 17.6% and during the second 24 hours in 23.1%. The frostbitten members were observed to turn dark or blue or black during the first 24 hours in 1.1% of the cases, on the second day in 10.45%, on the third day in 4.4%, on the fourth day in 6%, and on the fifth day in 3.3%. Pronounced edema was observed on the second day in 53.9%. The figures reveal that in the majority of cases the sufferers did not notice the early symptoms of frostbite. Disappearance of the edema took place at some time between the first to the twenty-fifth day. With persons in a good state of nutrition the swelling vanished considerably sooner than in those with pronounced symptoms of deficient nutrition and hypovitaminosis. In the former the symptoms usually disappeared in the first five days, while in the latter they subsided more slowly and disappeared toward the end of the second or third ten-day period. Blisters, according to our findings, most frequently appear during the first 24 hours; more rarely on the second or third day. A heightened temperature was noted in 39.6% of our patients, an acceleration of the erythrocyte sedimentation rate in 37.4%, leucocytosis in 22%, and a displacement of the leucocytic [Arneth] count to the left in 20.9%. The infrequent occurrence of heightened temperatures and the leucocytic alteration in frostbite is apparently not pathognomonic of the damage itself; rather it indicates infective complications therein. Indicative signs accompanying frostbite were, in our patients, as follows:- In the second and third degree cases, a lowering of the skin sensitivity in 37.4%; in third and fourth degree patients, the loss

* That is, when there is an unequal involvement of the two feet in the same person, it can usually be explained by the fact that one of his shoes was too tight. (Tr.)

of every form of sensation was noted in 24.2%. In numerous cases zones of hyperesthesia were observed. Laryngitis and bronchitis were seen in 26%; they took a relatively mild course and usually disappeared in five to seven days time. Among the complications shown in our data we should mention 1.65% of general infection and 17.6% of local purulent infection. The cases with general infection followed a course of the moist gangrene type, and an extremely severe one, with shivering fits, high temperature, leucocytosis and displacement of the leucocytic /Arneth/ count to the left; here both palliative surgical intervention and radical operative treatment were necessary. Local infection was observed as a complication in 17.6% of our patients and took the form of phlegmons, phlebitis, purulent arthritis, lymphangitis, etc., accompanied not infrequently by high temperatures and requiring supplementary surgical treatment.

The X-ray showed no gross bone-changes in particular; in certain patients with the more serious involvements a non-acute osteoporosis was observed in the region of the metacarpo-phalangeal joints, (as also noted by BYKOV, GOL'DMAN, LUBO, ARYEV et al.) Degenerative destructive changes in the phalanges were according to our findings noted in 9.7% of the patients. These changes were detected in cases which took a grave clinical course, during the sixth to seventh week after the frostbite was contracted. Changes in the joint-cartilage were not observed. X-ray findings in frostbite do not bear any close relation to the seriousness of the clinical picture and are of only secondary assistance in diagnosing involvements of this type.

The treatment of frostbite is quite a complicated task; it varies according to the degree and stage of the involvement. No single method of treatment exists at present, but insofar as frostbite is accompanied by necrosis, degeneration and inflammation of the tissues, one must strive to convert moist gangrene into dry, and to promote the most rapid sloughing of the necrosis and development of granulation and epithelialization. The polymorphism of the clinical picture and the lack of clarity in the etiology and pathogenesis of frostbite have led to the working out of numerous methods of treating it, but there is no method which can completely satisfy all clinical requirements or be employed under all circumstances.

Among the therapeutic measures used for this type of injury it is necessary to distinguish between first aid and subsequent treatment.

First aid in frostbite has a very real importance for the further course of the ailment. Until the stage of reactive inflammation develops, three aims are usually pursued;- (1) re-warming of the whole body, (2) overcoming ischemia, and (3) the prevention of secondary infection. The sufferer is placed in a warm room and given hot drink (sweetened tea), alcohol, hot food, and symptomatic medication as indicated. The fear of putting the frostbitten patient right away into a warm room has no foundation whatever and, as the researches of GIRGOLAV and ARYEV have shown (10), is even a dangerous and harmful notion. Indeed the most effective procedure is the speedy re-warming of the frostbitten parts of the body with the aid of warm water baths or physiotherapeutic procedures, plus sterilizing the skin with alcohol, benzine or brilliant green, raising the affected extremities, and the repeated use of massage.

In the case of the head and face, re-warming and re-establishment of circulation are secured by rubbing the affected areas with cotton wool moistened in alcohol, or by dry rubbing if alcohol is unavailable, until erythema is produced. The earliest possible application of heat, as recommended by ARYEV and GIRGOLAV, is undoubtedly an effective measure in frostbite; its superiority as compared with other methods has been demonstrated both experimentally and clinically. It is now incontestable that among the various therapeutic measures used in frostbite first aid, we must replace the use of cold by the use of heat. (Rubbing with snow has no advantages over the use of heat; the snow is usually contaminated, the fine ice particles found in it may scarify, and so forth). The prompt application of heat is a method which should be brought into the widest possible use both in first aid and in subsequent treatment of this ailment. As FRENKEL points out, if proper results are to be obtained after warming up frostbite cases, the fundamental idea is not just general heating but getting the affected tissues heated through. Measures for this purpose take the form of warm water immersion and various physiotherapeutic procedures. According to the "Instructions re Military Field Surgery" /UKAZANIYA PO VOENNO-POLEVOI KHIRURGIYI/ of the Medical Corps Directorate /GLAVNOYE VOENNO-SANITARNOYE UPRAVLENIYE/ for 1941, when there is frostbite of the extremities the temperature of the bath should be raised from 18 to 35°C over a period of 20 to 30 minutes. In addition to the warming effect, water-baths are used as a means of mechanically cleansing dirt from the limbs, hence the immersion of arms and legs should be accompanied by washing with soap. During the washing and after, the frostbitten limbs should be massaged. This massage should be gentle, a stroking of the limbs and a mild kneading of the skin and underlying tissues; the masseur should direct his motions from peripheral areas toward the central parts of the body. Massage while in the bath and afterwards should be done with a thick sterile rubber glove or with clean-washed hands, so as not to introduce infection from the hands of the masseur. The patient should be told to keep actively moving his fingers or toes in the bath. After bathing, 70° alcohol is applied twice in succession. Then the massage is repeated, preferably with the masseur's hand in a sterile rubber glove liberally greased with sterile vaseline. The time to halt the massage is determined by signs of restored circulation. Massage should be applied not only to the frostbitten area but to the whole limb. If water-baths or physiotherapeutic procedures cannot be used, one should employ massage and friction, first with alcohol and then dry, and use should be made of all means for the general re-warming of the patient.

In the stage of inflammatory reaction, first aid should be directed principally toward preventing the development of infection in the frostbitten areas, toward the treatment of any infection already developed, and toward promoting the speediest elimination of necrotic tissues. After the restoration of the circulation and the appearance of edema, we wipe the injured members with alcohol and apply a dry aseptic dressing. The member is rewarmed and wrapped up, and the patient forwarded in this state to hospital for treatment. All types of moist dressing are contra-indicated. This is as far as first aid measures may go. Further procedure and treatment for those suffering from the effects of cold will vary according to the stage and degree of the involvement. The treatment of first degree cases usually involves processing the affected areas of the skin with a 5% alcohol solution of brilliant green, 5% tannic acid or boric solution in alcohol,* and other such

* Literally "tannic or boric alcohol". See U.S. Dispensatory under "Tannic Acid" and "Boric Acid." (Tr.)

means, with simultaneous use of physiotherapeutic methods. In treating second and third degree frostbite the blisters must be removed, after which the energetic use of physiotherapy is necessary. Upon opening the blisters one should apply tannic acid solution.

In frostbite of the feet and hands, our procedure is to treat the whole member repeatedly with alcohol and to remove the nails. We scarify the necrotic areas, using incisions parallel to the axis of the member (of greater or less depth according to the penetration of the necrosis) and in the direction of the center of the body.

In third degree frostbite the beds of the nails should be incised to the bone, and in especially grave cases deep incisions are made in the interdigital webs to the tips of the metatarsal bones, and the ligaments and skin of the sole are cut.

Necrotic tissue should be incised through the whole thickness of the foot, but in doing so one must leave an unincised area of dead tissue extending to a distance of one centimeter from the demarcation zone. One may gauge the correct extent of this procedure, first of all by the complete painlessness of the operation, which may be done without anaesthesia, and second, by the absence of any flow of blood when making the incisions. Further treatment of frostbite is most profitably carried out by "open" methods /i.e. unbandaged/ under a hood. When it is impossible to use open methods, use an aseptic dressing with alcohol, applied after swabbing as indicated, or if alcohol is not available, use an aseptic dry dressing. Ointment dressings should not be used during this phase of the treatment; they should be used only after the development of granulations (MIKULICZ's or VISHNEVSKI's ointment). However these ointments should be employed only at the consolidation stage of granulation; subsequently one should change to a bland ointment, along with which moist aseptic dressings (hypertonic salt solution) are periodically applied. These dressings, as our observations have shown, promote sloughing of the necrotic areas, inhibit excessive growth of the granulation tissue, consolidate the granulation and accelerate the process of epithelialization. In fourth degree frostbite (where there is complete necrosis of the soft tissues and bones) it is essential to remove the necrotic tissues as early as possible (necrotomy, necroectomy) a little distal to the demarcation-line.

Immediate amputation in frostbite cases is strictly contra-indicated, since in many cases the formation of a base-stump has been observed to take place at points which one could hardly have expected from initial examination. However, if demarcation takes place along the diaphysis of the bone, then, as ARYEV's researches and our own researches have shown, spontaneous separation of the necrotic portions proceeds extremely slowly (on the phalanges it may not occur for 3 - 5 months). Hence what is to be done is to carry out the correct early processing, which in frostbite consists in prompt scarification, the liberal incising of necrotic tissues, excision and debridement of the necrotized area (so as to leave a small layer of necrotic tissue on the distal site of the demarcation-line). In the early procedures, the bones should never be cut back. Working on the bones would entail operating on the living tissues, which is contrary to the principles on which our early treatment regimen is based and would create conditions favoring the spread of infection. (Operative) inter-

vention of any kind should be carried out on the necrotic tissues; it does not require anaesthesia and is not accompanied by flow of blood.

In the opinion of ARYEV and GAMOV, early operative procedures should be carried out just as soon as it can be indubitably determined that the changes in the frostbitten areas are irreversible. From our observations and from data in the literature, it may be stated that this takes two to five days. The absence of superficial or deep sensation, the absence of blood-flow upon making incisions or pricking, and the development of symptoms of reactive inflammation above the demarcation line are (according to GIRGOLAV and GAMOV) indicative of the need for surgical measures. In amputation the aim should be to create, in the shortest space of time, base-stumps suitable for prosthesis.

GAMOV considers that the indications for final amputation are the formation of scab on the wound-surface of the stump, firm granulation on this surface, or dry gangrene (the mummification of the frostbitten portion with formation of a distinct demarcation groove). Amputation, particularly osseo-plastic amputation, should not be carried out in the presence of well-expressed symptoms of inflammatory reaction above the demarcation-line.

The treatment of infective complications in frostbite is carried out according to the usual rules. Phlegmons are opened and drained. When there are isolated suppurative arthritides, arthrotomy is used: when there are multiple suppurative arthritides of the interphalangeal articulations, it is in ARYEV's opinion better to wait for spontaneous discharge because of the difficulty in establishing local indications for multiple arthrotomy.

In treating third and fourth degree frostbite, our experience has shown that one should from the very beginning pay proper attention to re-storative exercise and therapeutic physical exercise (which have a very beneficial effect on the cardio-vascular and nervous systems and prevent the development of joints stiffened by contractures), also proper attention should be devoted to electrotherapy in its various forms, and to ultra-high frequency therapy (YANOSHEVSKAYA).

When there is anemia in cases of this type, repeated blood trans-fusions should be used. BRAICSEV and RABINOVICH's suggestion of repeated in-jections of 10-15 cm3 of 20% alcohol in frostbite cases in the war area is a well-grounded idea of which a more extensive use could be made. A.V.VISHNEVSKI's method of non-specific treatment (novocaine block and nerve-sheath blocking), which we have used on a number of our patients, gave positive therapeutic results. The patients usually reported decreased pain and improved sleep, and in the affected extremities one could observe increased warmth, hyperemia and an improved circulation of the blood. Academician N.N.BURDENKO also devotes a good deal of attention to the neurotrophic apparatus in the pathogenesis of frostbite; he arrives at the conclusion that blocking of the reflex paths is of use during the first period of the injurious action of low temperature. As we see it, other means which have been suggested for frostbite treatment, fish oil (SHEINIS, ZHDANOV), tannin-mercuric-chloride bandages (KHASKELEVICH, VASIL'KOVAN*), Lügol's solution (PUMPIANSKI), formalin-carbolic solution (POPKOV), have a reasonable theoretical basis and need further trial.

* See page 26 (Tr.).

In all cases of frostbite of the lower extremities it is essential to give a prophylactic injection of anti-tetanus serum, 1500 units in amount.

In the matter of indications for the operative treatment of frostbite we have generally adhered to the dicta of GIRGOLAV, ARYEV, and GAMOV; in a number of cases we were guided by the neurotrophic concept and carried out RAZUMOVSKI's operation. We practised blister-removal in 53.9% of the cases, removal of nails in 42.3%, NÖSSKE-type incising in 26.9%, amputation and ex-articulation of the digits in 20.9%, amputation of the extremities in 1.1%, incising on account of infective suppuration in 25.3%, RAZUMOVSKI's operation in 7.1%, and skin-grafting in 11.5%. Outcome of the treatment was as follows:- improvement noted in 12.1%, recovery in 78.1%, discharged on furlough, 2.2%, classed as "fit, with limitations" 3.3%, classed as "incapacitated" 3.8%, died 0.55%. The average number of bed-days was 49.4.

The high percentages of recovery and improvement (90.2) and the relatively low bed-day average we may explain by the fact that we used an active program of combined treatments, extending even to attempts to influence the sympathetic nervous system directly. Patients discharged on /medical/ furlough were generally cases in which the injured tissues were in process of regeneration, but in which there remained the familiar debility of the cardiovascular system, anemia, etc.; all these patients without exception later returned to their former duties. In the group classed as "of limited fitness" were those whose condition was generally satisfactory and in whom the local process had terminated, but who showed the familiar locomotor difficulties (for the most part in the foot and toes). Patients were put in the "incapacitated" group and dropped from the /service/ rolls if they had undergone necrotomy or necroectomy, or after amputation necessitated by the development of moist gangrene and sepsis. One of our patients had fourth degree frostbite of both lower and upper limbs with subsequent development of moist gangrene and sepsis; he died, in spite of symptomatic and operative measures taken in good time. The fourth degree frostbite in this case was contracted in a state of alcoholic intoxication and extended not only to the hands and feet but to the shins and fore-arms also; the involvement was exceedingly grave.

Apropos of frostbite prophylaxis, the "instructions re Military Field Surgery" of the Medical Corps Directorate of the Red Army demand that the wounded, particularly stretcher cases, should be safeguarded by chemical heating devices; particular attention should be paid to warming the affected extremities.

In the prophylaxis of frostbite great importance is to be attached to the moderate use of alcohol for general warming of the body, to keeping the body in movement in cold weather, to good footwear and clothing which will give protection against getting the limbs wet and chilled, and to regular meals of quantitatively and qualitatively adequate food.

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* See page 18. (Tr.).

Translated from Voenno-Sanitarnoye Delo [Med. Corps Affairs] 10, pp.57-59 (1940).

THE TREATMENT OF CONGELATION* CASES IN EVACUATION HOSPITALS

Mil. Surgeon First Grade I. I. SMIRNOV and
Mil. Surgeon Third Grade ORLOV

We have been reviewing our material relating to the treatment of cold-exposure cases during the war with the White Finns. In classifying frostbite by its degree, we were guided by the following symptoms: in frostbite of the first degree the affected part of the body swells up and turns red; in frostbite of the second degree it takes on a bluish-purple tinge and the skin becomes covered with blisters of dark-colored content; in frostbite of the third degree there is necrosis of the skin (it turns black and comes loose), and sometimes of the muscles and bones.**

By degree, our congelation cases were distributed as follows: first-degree cases 0.8%, second-degree cases 56.2%, third-degree cases, 43%. From these figures it is seen that lightly affected cases (first-degree frostbite) are almost never sent to the rear.

The treatment of exposure cases in different hospitals was conducted in many different ways: they used dry dressings, ointment dressings, fish-oil dressings, water-baths and so forth, in combination with light-therapy and without.

Light-therapy (mercury-quartz lamp, Sollux) was employed in 26% of all cases, and was not used in 74%. The use or non-use of light-therapy was determined by the availability of proper cabinet equipment or by the previous physiotherapeutic experience of the individual surgeons. It was used in combination with other types of treatment.

Table 1 shows the duration of treatment of second degree frostbite cases in which light-therapy was not used.

Table I.

Days	20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 60	60 to 70	70 to 80	80 to 90	90 to 100 and over
%	14	21	16	5	11	6	6	3	3	5	10

The mean duration of treatment for second-degree frostbite without light-therapy was 42 days.

The duration of treatment for third degree frostbite without light-therapy is shown in Table 2.

* Although he is talking of frostbite exclusively, the author uses the word "obmorozheniye" [congelation or exposure to cold], which is usually employed in a very specific sense, contrasted with "frostbite". See page 59. (Tr.).

** Note that this author (1940) is using the older three-degree classification. (Tr.).

Table 2.

Days	30 to 35	35 to 40	40 to 45	45 to 50	50 to 60	60 to 70	70 to 80	80 to 90	90 to 100 and over
%	2.2	7.8	2.2	2.2	6.7	13.7	9	16.8	19

The mean duration of treatment for third-degree frostbite without light-therapy was 73 days.

The duration of hospitalization of patients with second and third degree frostbite when lamp treatment was used is shown in Table 3.

Table 3.

	SOLLUX				MERCURY-QUARTZ LAMP				
Days	30 to 40	40 to 50	50 to 60	60 to 70	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70
%	42.1	31.6	15.8	10.5	27	31	20	16	6
	Mean duration of treatment, 39 days.				Mean duration of treatment, 35 days.				

From inspection of these tables it is seen that whereas the second-degree group received hospital* treatment for an average of 42 days, and the third-degree group for an average of 73 days, when on the other hand Sollux treatment was given the duration of hospital* treatment averaged 39 days, and when mercury-quartz lamp treatment was given, 35 days. Moreover we conclude from the tables that when light-therapy was used no second-degree patients were hospitalized for more than 70 days, but when this treatment was not given 18% of the second-degree group remained in hospital over 70 days.

These figures, which cover a relatively large number of cases, indicate the advantages to be gained from a liberal use of light therapy in frostbite cases.

Of the total number of frostbite cases, 15% underwent surgery. This involved for the most part removal of the terminal phalanges or digits, and for the most part involved the feet.

Table 4 gives some idea of the outcome of the frostbite cases.

* Literally "bed treatment." (Tr.).

Table 4.

First deg. frostbite	Second degree frostbite		Third degree frostbite			
returned to unit	discharged to unit	1-2 months furlough	disch. to unit	1-2 mo. fur.	disch. from service	classed fit for non-active service
0.8%	48%	52%	39%	91%	3.8%	0.9%

From this table it is seen that 3.8% of all frostbite cases were classed as unfit for military service (all of these involving third degree frostbite). According to our data, the number of those classed as unfit for military service as a result of gunshot wounds was 1.2% of all casualties. Thus the number of those knocked out of our ranks by frostbite was three times larger than in the case of wounds.

Conclusions.

1) The inclusion of light-therapy in our armamentarium of frostbite treatment will considerably shorten the period of hospitalization.

2) The mercury-quartz lamp is more effective than the "Sollux" lamp.

3) Our contingent of frostbite patients finished up with three times the percentage of unfitness for military service as compared with the percentage for casualties in general. This is a fact which should incline the scientific research world to devote as much attention to the problems of frostbite prophylaxis and therapy as to the problem of treating wounds.

Translated from Voenno-Sanitarnoye Delo /Medical Corps Affairs/, p.57-88, 11, (1941)

ON THE TREATMENT OF FROSTBITE

Preliminary Report

A.A. KEVORK'YAN

For the treatment of frostbite we are using a menthol preparation. From our observations, this medicament is more effective than any of those which are usually employed under warfront conditions (brilliant green, painting with iodine, rivanol dressings, VISHNEVSKI's ointment, etc.).

We first began to use the menthol preparation in the treatment of ethyl bromide poisoning, in the clinical symptomatology of which are symptoms of involvement of the central nervous system, mainly localized in the lower section of the spinal cord (syndrome of spastic paraparesis of the lower extremities.)

Starting from the premise that there was a general significance to this neurovascular factor in the process of action of ethyl bromide on the organism, we prescribed the menthol preparation internally, in conjunction with diathermy of the lower section of the spinal cord. The success of this treatment in more than twenty cases of ethyl bromide poisoning has confirmed that our premise is well founded (see the periodical "Neuropathology and Psychiatry" No.1, 1937).

Subsequently we began to employ the menthol preparation as a therapeutic agent in angio-trophoneuropathies of various origin and nature. Thus for instance we were able to cure a patient suffering from sclerotic endarteritis* with an initial gangrenous process of the terminal phalanx of the great toe of the right foot, absence of pulse in the a. dorsalis pedis and a. tibialis postica on both sides. We obtained impressive results in using the menthol treatment. In two months time we secured complete healing of the lesion of the great toe, restoration of the normal coloring of the dermal integuments, reappearance of the pulse in the a. dorsalis pedis and a. tibialis postica, and elimination of pain. Throughout the two years during which the patient remained under our observation, he continued to be in perfect health and took walks of more than 2 km without experiencing any pain.

We obtained exactly the same decisively demonstrable results in treating moist eczema of both wrists in a stone-mason patient, and in treating a number of cases of trophic ulcers, Raynaud's disease, and sclerodermia. In 1940 we had the opportunity to observe six patients with symptoms of angio-trophoneuropathy, who were cured by our method in Wards II and III of the First Communist Hospital. In five cases a panel of physicians headed by F.F. BEREZINSKI reported that the treatment used was successful.

We now have at our disposal observational data on 25 cases of treatment of second and third degree frostbite and 15 cases of treatment with spirit of camphor.

x Endarteritis obliterans (Tr.)

A comparative appraisal of the data obtained permits us to establish that the following regularly occurring phenomena are observed when treating frostbite with menthol preparations:- elimination of pain, reduction of edema, improvement in skin color, reduced amount of discharge, and a considerable acceleration of the wound-healing process. Of course, under the circumstances of our work (military hospital train) we were limited insofar as the period of observation was concerned (12-13 days), nevertheless the facts in our possession are completely reliable.

Spirit of camphor (menthol belongs to the camphor group) also gives satisfactory results, but more slowly and without the analgesic effect which is observed in using menthol. The ordinary methods of treatment (rivanol bandages, VISHNEVSKI's ointment, etc.), which we employed in some cases, gave no noticeable effect within the period of one round trip /of the hospital train/.

What is the basis on which the use of menthol in frostbite treatment rests?

Menthol is a strong antiseptic agent. When used internally it improves the coronary circulation and dilates the peripheral blood vessels; when acting locally, it dilates the blood vessels, improves the local blood circulation and relieves pain, that is, by its effect on the neurovascular apparatus it alters conditions in respect to supply of nutrients to the tissues, (see the works of KRAKOV, SKVORCSOV, GRAMENICSKI et al.).

We have been using a 3-5% alcoholic solution of menthol. One may use 3-5% Ol. Mentholi or Ung. Mentholi, but in open wounds it is preferable to employ the alcoholic solution. If menthol is unobtainable, 3-5% spirit of camphor may be used. A gauze cloth, liberally moistened with an alcoholic solution of menthol, is applied to the frostbitten part of the body, it being essential to include the surrounding healthy tissue (in frostbite for instance the toes or the whole foot). A dressing is then applied as usual.

During a ten day period dressings with a 5% menthol solution should be applied not less than once per day (better two or three times). On the days which follow, the changing of dressings and the concentration of the menthol will depend on the actual circumstances of the case.

One of the most important conditions for the success of this treatment is to apply it as early as possible. For this purpose it is quite important that first aid men, field medical posts and all war-front establishments of the Red Army Medical Service should have a sufficient quantity of menthol solution on hand.

OIC Mil. Hospital Train,
Cand. Med. A.A. KEVORK'YAN

Translated from Sovietskaya Medicsina [Soviet Medicine], 13-14: pp.16-18 (1940)

TOPICAL TREATMENT OF FROSTBITE WITH VITAMINS

K.L. GOLDSCHMIDT and M.F. MEREZHINSKI

Of the Molotov Stomatological Institute (Director S.I.VASILOV) and the Molotov Medical Institute (Director P.P.SUMBAYEV).

A fair number of observations have been made, indicating that treatment of burns and wounds with vitamine A gives positive results. One of the first research workers along this line was LEHR: he arrived at the conclusion that in the practical work of the surgeon vitamin A should not be neglected, and he supposes that under the influence of pastes containing vitamins A and D a process of diffusion and detoxication goes on in the tissues; the unsaturated fatty acids which are found in fish oils have an anti-infective action. The absorption of toxic products may indeed not be hindered, but they lose their toxic properties. LÜTENLOCH, who carried on LEHR's observations, supposes that fish oil nullifies the toxic substances formed in the decomposition of tissues. This process depends on the saponifying action of the unsaturated fatty acids. On this premise LEHR suggested that besides using fish oil internally in the treatment of traumata it might also be used as a topical medicament.

The use of ointment therapy must be limited to those cases where the desideratum is a reinforcing of the regenerative processes; in cases where there are general inflammatory symptoms, deep tissue damage on a large scale, toxemia etc., one should from the beginning apply a treatment designed to check these processes. Measures of this kind include treatment with ultra-high treatment waves, the quartz lamp and other physiotherapeutic procedures. For their part however UHF waves are incapable of speeding up the regenerative processes, and they sometimes mummify the weakened regions of the tissues; on this account their use should be suspended in those cases where the inflammatory process has subsided and the necessity of accelerating the regenerative processes appears. In such cases a combined treatment is indicated, with both physiotherapeutic measures and ointments containing vitamin A. From what we have set forth above, we consider that ointment therapy is fully applicable and does speed up the regenerative processes.

Taking into consideration the fact that in frostbite we must establish conditions unfavourable for the development of bacteria, improve the state of local nutrition and reinforce the tissue-building processes, we settled upon the use of ointments containing fish-oil, lanoline, vaseline oil*, vaseline, and wax.

We became convinced that the best therapeutic effect on frostbite is shown by an ointment containing 35-45% lanoline, 10-15% wax, 30-35% fish oil, with vaseline and vaseline oil to make up the remainder to 100%. One may regulate the consistency of the ointment by the respective amounts of vaseline and vaseline oil.

The ointment is prepared by melting the wax, lanoline and vaseline in a water bath at a temperature of 100°C and mixing them. After this the fish-oil is

* Oleum vaselini, i.e. liquid petrolatum (Tr.).

added. If necessary the lanoline, wax and vaseline may be sterilized.

According to our observations, this type of ointment, thanks to the presence in it of vitamins A and D, cholesterols, lecithins, unsaturated fatty acids, complex esters of various kinds, and mineral substances, is conducive to:-

a) The establishment of equilibrium in the colloidal state of the tissues, as a result of which surplus water is thrown off, edemata disappear, and so forth; processes promoting a reduced concentration of the tissue-solutions and thus favoring the operations of synthesis essential to the reparative process;

b) The immobilization of the acid products of decomposition formed locally in the frostbitten tissues;

c) An excitation of the local reticulo-endothelial elements when a thin layer of the ointment is applied to the wound surface, as a result of which there takes place a heightened absorption of necrotic areas and edemata;

d) The strengthening and speeding up of the regenerative processes and the emergence of granulation and epithelialization.

The winter of 1939-40 was very severe everywhere, particularly in the northern provinces of the USSR; the cold weather held for a long time and many persons working in the open suffered from the effects of the low temperatures.

We had under our observation patients with various forms of frostbite. In all, eight patients with first degree frostbite, forty-five with second degree frostbite, thirty-one with frostbite of second to third degree, and thirty-four with third degree frostbite were subjected to ointment therapy.*

There were also four men with second degree burns.

For successful treatment, a preliminary processing of the affected areas is very important; therefore each frostbite case was processed like a surgical patient.

In second degree frostbite and in the intermediate second-to-third degree forms of frostbite, it is important to secure the most intimate contact between the frostbitten area and the ointment applied. To this end it is essential to puncture the blisters and send samples for a bacteria count, then to open the blisters and remove the tops, and to remove /finger or toe/ nails which have lost their normal color. The eroded ulcerous surface thus exposed is treated with a 5% solution of potassium permanganate or a 2% alcohol solution of brilliant green or a 2% solution of methylene blue. This preliminary treatment with one of these solutions is for the purpose of avoiding secondary infection.

When there are gangrenous areas with a tendency to suppurate, they are syringed with hydrogen peroxide and the surface wiped with dry gauze, after which the "A-ointment" in melted form is applied in a thin layer.

Before using, the "A-ointment" is warmed in a water bath of temperature 80°C, and carefully applied to the frostbitten areas with a gauze pad of two or

* Note that this author is using the old three-degree classification. (Tr.).

three folds. In a minute or two the ointment on the effected areas forms a soft film in solid contact with the wound surface. A think layer of ointment is built up on the interdigital folds so that there will be no growing together of the affected areas. After the ointment film has formed, a thin layer of gauze and lignin is put on. The use of thick layer of cotton wool in this treatment is contraindicated, as this causes some maceration. It is necessary to see to it that the patient does not put too much pull on the lower extremities with his garters or trousers-suspenders. Dressings should be changed at two or three day intervals; in exceptional cases re-dressing should take place even earlier.

When changing the dressing, what is left of the ointment is removed from the affected areas with ether or alcohol. Then the affected areas may be cleaned up; when using this treatment it is very easy to remove remnants of blisters, flakes of nail-horn and necrotic masses, sanguineous scabs and crusts.

We have been making wide use of our ointment for removing the scabby crusts and necrotic epidermis which form after painting with potassium permanganate or brilliant green. In two or three days time these crusts are easily removed, while ordinarily they take 21 to 28 days period to come off (ARYEV, page 176).

After cleaning up the affected areas, the ointment is again applied. Those cases where a slight maceration appears in the affected areas should be treated with brilliant green or a 5% solution of potassium permanganate.

In frostbite of the second or third degree, the therapeutic influence of "A-ointment" on the wound surface and surrounding tissue will be already manifest after the second dressing, sometimes even after the first. Tissue hyperemia and edema in the vicinity of the affected area will be decreased, the inflammatory process will die out, and granulation-tissue of soft pink colour will emerge. The development of granulation-tissue will proceed simultaneously with epithelialization. No tendency to bleed will be noted in these areas, such as occurs with physiotherapeutic methods of treatment (UHF and quartz lamp). The epithelialization process, when the ointment therapy is used, is characterized by its comparatively rapid course.

In third degree frostbite the process of epithelialization and the development of granulation will, when "A-ointment" is used, proceed in the same manner as in the intermediate forms of the second and third degree. In cases given the ointment treatment, the demarcation line is serrated and sloping, its edges encroach beneath the scab-crusts; its surface does not bleed, and the granulations are distinguished by their succulent nature and pink shade. The necrotic areas mummify relatively more slowly as compared to the UHF treatment and the various mummified areas progress in a less painful manner than in the case of UHF and quartz therapy, because on the stump we already have a large part of the injury covered over by the time the necrotic tissues separate, something which is also very important from the point of view of subsequent operative intervention.

Finally it should be mentioned that in first degree frostbite the ointment therapy considerably shortened the period of treatment, indeed to approximately half the time with ordinary methods of treatment. With the lighter forms of second degree frostbite the healing process was complete in 8 - 12 days after removing the blisters. In cases where the blisters were not removed and the ointment was

applied on top of the blisters, further exudation and exfoliation of the epidermis took place; that is, there was an aggravation of the process.

Our observation showed that the ointment should not be put on the necrotic areas of tissue, because under these circumstances all that takes place is a retardation of the mummification-process. Ointment therapy should not be used in cases where moist gangrene is present over large areas (lower and upper limbs). Our observations show that in these cases it is necessary to convert the moist form of gangrene into the dry form (by scarification or UHF), and then only after this conversion from moist to dry gangrene has been effected should the ointment be applied to speed up the sloughing of the necrotic tissues and to secure the most rapid regeneration of the stump area.

We were able to bring out the fact that when only UHF and quartz lamp treatment was given there was formed a "demarcation pit" which looked as if stamped out with a punch. The wound surface had a bluish red tinge with no tendency to granulation and epithelialization. The edge of the wound surface or, more precisely speaking, the skin adjacent to the wound surface was crusted over with a border ring of blood-tinged scabs. On removing these scabs a sluggish bleeding took place, followed by re-appearance of the same kind of scabs. The subsequent scar-formation on these areas proceeded slowly, the UHF and quartz lamp treatment failing to secure speedy tissue regeneration.

In consideration of the fact that our basic task was to create conditions favorable for restoring the functioning of the damaged member we have also made use of a combination of treatments.

In three cases we treated burns caused by flash-explosions of gasoline. During the first few days we used various ointment treatments which were unsuccessful. Complete healing was secured after three successive bandagings with "A-ointment."

The above observations permit us to formulate the following conclusions.

1) "A-ointment" is a medicament which should be given a place in frostbite treatment on a par with other therapeutic methods.

2) First and second degree frostbite submit to treatment with "A-ointment."

3) Cases of frostbite in which it is difficult to determine the degree, but where the arterial pulse is present in the affected area, where there is no acute edema and where the blisters are sterile, yield to treatment with "A-ointment."

4) In evident cases of third degree frostbite with clearly marked demarcation, lymphangitis and acute edema, "A-ointment" treatment is not indicated until such time as we have got rid of the edemata and lymphangitis with other methods of treatment.

5) In grave cases of frostbite (total gangrene), ointment therapy should not be used during the first few days after the exposure; it may be prescribed only when distinct separation of the gangrenous area has taken place along the demarcation line. In such cases the ointment is applied on the wound surface and adjacent areas of healthy skin.

6) In cases where there is a definite dry gangrene with distinct sequestration, it is essential to use ointment on the areas of "live" tissue in order to speed up the processes of tissue regeneration and epithelialization.

7) Ointment therapy speeds up the separation of the scab-crusts.

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FROSTBITE PROPHYLAXIS BY MEANS OF GREASES

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Among the prophylactic measures used against frostbite, the anointing of the skin with different fatty substances enjoys general popularity. The list of greases, grease-like substances, and different compound ointments is too large to enumerate. To date however the use of greases and ointments to guard against frostbite has had a purely empiric character and, being founded exclusively on hoary experience and for the most part on purely popular tradition, has yet to be placed on a scientific foundation.

Hence it is quite understandable that there should be disagreements in the opinions we encounter in different authors, on this question of the value of greases in frostbite-prophylaxis generally, and on the appraisal of the value of the different fatty substances in particular.

There is an evident need for more profound study of this question, which is of such great practical importance, and for an attempt to set it on a proper scientific basis.

The whole multitude of problems arising in this connection may be solved only through experiment. Yet there are great difficulties in making such experiments on humans. This is the reason why we decided, before making the needful experiments on humans, to institute preliminary tests on animals, on rabbits in particular, using for this purpose a cold-chamber which we constructed for exposing rabbits' ears to frostbite.*

Before proceeding to the detailed study of the problem, it was necessary to establish the basic premise: are various greases, grease-like substances and compound ointments really capable of prophylactic action against frostbite, and to what degree are they effective? The present article is composed of material obtained by us in experimental investigation of just this point.

It is necessary to mention that an attempt to study experimentally the prophylactic action of fatty substances on rabbits' ears had already been made in the skin clinic of the VORONEZH Medical Institute.** However the experiments were carried out in a manner so imperfect from the procedural point of view that the authors, themselves recognizing the extreme inexactitude of their tests, refuse to draw any conclusions.

Besides tests in the chamber, we made parallel experiments in the open

* "Methods and some results in the experimental study of frostbite" (Metodika i nekotorye rezul'taty eksperimental'nogo izucheniya otmorozheniyi), Works of the S.M. KIROV Academy of Military Medicine, Vol. XXLX. 1941.

** ABRAMOVICH and ASHURKOV, Works of the Skin and Venereal Disease Clinic of the VORONEZH Medical Institute.

in cold winter weather, for purposes of comparison and in order to bring the experiments closer to natural conditions.

In all we carried out sixty-three experiments, in the course of which we studied the prophylactic action of eight different greases, grease-like substances, and grease-mixtures: (1) pork lard, (2) goose-grease, (3) lanolin, (4) margoguseline*, (5) kombizhir**, (6) lard compound, (7) American vaseline, (8) Russian vaseline. In addition, we carried out tests on two ointments suggested as prophylactics against frostbite and sent to us for testing (Pharmacist BABICSKI's ointment and Madame SAMKOVA's ointment, the compositions of which are shown below), and also on one emulsion quite widely used at the front during the war with the White Finns.

Most of the tests (thirty-nine) were made in the chamber, with a lesser proportion of them (twenty-four) in the open air in cold winter weather.

Without dwelling on the detailed procedure of tests made in the chamber, which we have described in the article mentioned above, we merely note that the tests were made on the depilated ears of rabbits, one of which in each test was lightly massaged and then anointed with the prophylactic substance under trial; the other ear remained unanointed but otherwise in exactly the same condition, and served as control.

In making the open-air tests the ears were treated in this way, then the rabbits were bound to a stand and swathed in a thick layer of cotton wool.

The results of the experiments were appraised not only on the basis of direct observation of the animals themselves but also on the basis of thermometric data.

It is not possible to give our experimental reports here in detail; we shall give only short extracts from them.

Pork lard was tested in thirteen experiments, of which seven were carried out in the chamber and six in the open air.

From the data we obtained it was evident that in only one test did the ear escape injury when anointed with pork lard. In the majority of the tests the ear thus treated showed some degree of frostbite. Nevertheless in eight out of thirteen of these tests, the degree of frostbite in the anointed ear was less than in the control ear. In three tests the anointed ears and the control ears were frostbitten to an identical degree and, finally, in one test the anointed ear was more severely frostbitten than the control ear.

Bringing into consideration certain tests which we made to establish that under identical conditions, both in the chamber and under natural conditions, each ear should be frostbitten to an identical degree, we are justified in suggesting that the observed differences in the degree of frostbite in the test-ears and control-ears is a result of a prophylactic influence of pork lard. It appears that this prophylactic influence is of comparatively short duration; it has a definite limit, and when there is protracted exposure to a low temperature, as in our experiments #1 (nine hours at -17°), #3 (eight hours at -12.5°) and #5 (six hours at -16°), the effect is practically nil.

* A compound of goose-grease and lard. (Tr.).

** "Combined fat". (Tr.).

As for the degree of prophylactic effect shown by the lard, it appears that individual peculiarities play a definite part, a matter which needs further study. In all likelihood it is these individual peculiarities which we should consider as the explanation of the reversed effect of the lard in our experiment #2.

Goose-grease was tested in nine experiments, of which three were carried out in the chamber and six in the open air.

The results of these tests were almost identical with the foregoing. Only in one experiment did the ear anointed with goose-grease escape without damage. In four cases the anointed ears showed a greater or lesser degree of frostbite, but not so markedly as in the control-ear. In three experiments the test-ear and the control-ear were frostbitten to an identical degree. And finally, in one experiment we encountered the paradox of a reversed effect, just as in the case of the pork lard.

Thus goose-grease, like lard, is capable of prophylactic action against frostbite, but its action is limited, and when there is prolonged exposure to cold and a low enough temperature, goose-grease is not adequately effective.

Lanoline (anhydrous). This was tried in four experiments, carried out in the chamber.

From the data obtained, it was evident that in three of the tests the ear anointed with lanoline was frostbitten to the same degree as the control ear, while in one test the anointed ear showed a considerably more acute degree of frostbite than the control-ear.

Thus, judging from our tests, which were few in number but highly concordant in results, lanoline does not possess any prophylactic properties even with a comparatively short exposure (three hours 35 minutes at -13.5°).

Margoguseline with lard was tried in four experiments, three of which were carried out in the chamber and one in the open air.

In only one test did the ear anointed with margoguseline show a lesser degree of frostbite than the control. In two cases the test-ear and the control-ear were frostbitten to an identical degree and, finally, in one test there was observed a more acute frostbite in the test-ear than in the control.

The data we obtained compel us to suppose that margoguseline does not have a sufficiently marked prophylactic action.

Lard compound* was tried in four experiments, carried out in the chamber.

Results of these tests were somewhat better than in the trials with margoguseline. In three of the tests the ear anointed with lard compound showed a lesser degree of frostbite; in one test both ears were frostbitten to an identical degree. However, taking into account that the tests were carried out at a mean temperature of -11.5°C and were not of long duration (averaging 3 1/2 hours) as compared with other tests, the prophylactic effect of lard compound may be considered as insignificant.

x See U.S. Dispensatory under "Adeps", p. 64 (Tr.).

We tried two grades of kombizhir, namely kombizhir #1 and high-grade kombizhir containing pork lard. Tests in both cases were carried out in the chamber. From the data obtained it was evident that there was a definite difference in prophylactic effect as between kombizhir #1 and the high-grade kombizhir.

While in the tests with kombizhir #1 the control-ears were more severely frostbitten than the anointed ears, in the tests with the high-grade kombizhir the opposite result was obtained: in all three tests the ears anointed with the high-grade kombizhir showed a more strongly developed frostbite picture than the control-ears. We got the impression that Kombizhir #1 is capable of some prophylactic effect on rabbits' ears, though to an insignificant degree, while the high-grade kombizhir has no prophylactic qualities and even makes matters worse.

Tests were also made with two grades of vaseline, American and Russian. All these tests were made in the chamber.

From the data obtained it was evident that the ears anointed with the American vaseline showed a somewhat lesser degree of frostbite, notwithstanding the long duration of the tests (six hours forty minutes and ten hours twenty minutes) and the relatively low mean temperature (- 15° and - 12°).

Completely different results were obtained with the Russian vaseline. In four tests with different exposure-times, one of them being of insignificant duration (three hours thirty minutes), sharply negative results were produced.

In three of the tests the ears anointed with vaseline showed a considerably greater degree of frostbite, and only in one test were both ears frostbitten to an identical degree. The results of these tests are of undoubted interest and by the way are in agreement with verbal statements made by two physicians who told us of cases they had observed in which the poor grades of vaseline showed a negative prophylactic effect on humans.

SAMKOVA's ointment, sent to us in already made-up form for testing, has the following composition:-

Beeswax	25%
Vegetable oil	35%
Alcohol	25%
Castor oil	15%

The ointment was tried by us in six experiments; two of them were carried out in the chamber and four in the open in cold winter weather.

In not one of the tests did the ointment show any prophylactic action. In five cases the test-ears and the control-ears were frostbitten to an identical degree, and in one the control-ear suffered less than the anointed ear.

Pharmacist BABICSKI's ointment, sent to us for testing, has the following composition:-

Camphor	10%
Salol	5%
Lanoline	85%

Thus BABICSKI's ointment is one of the so-called stimulating ointments which are widely recommended at the present time.

The testing of the ointment was carried out in four experiments, all of which were performed in the open air in cold winter weather. In three tests the anointed ear showed a more acute degree of frostbite than the control-ear, and only in one case were both ears frostbitten to an identical degree.

Hence the ointment suggested by BABICSKI not only failed to justify its use as a prophylactic medium, but on the contrary helped to cause a more intense frostbite. Possibly the defect of this ointment is that lanoline was chosen as its base.

The last series of tests was devoted to the study of the prophylactic effect of an emulsion which was quite widely employed at the front during the war with the White Finns.

The composition of this emulsion is:-

Formic acid spirit	70.0
Oil of mustard	20.0
Spirit of camphor	100.0
Spirit of soap*	50.0
Animal fat	30.0

The emulsion was tried out in five tests, of which two were made in the chamber and three in the open air. A small quantity of the emulsion was rubbed into the skin of the depilated ear.

In five cases the degree of frostbite was identical in the test-ear and the control-ear. Only in one test was the degree of frostbite in the test ear somewhat less than in the control-ear, but the difference was insignificant. We unfortunately have no data on the result of using the emulsion on humans. In our experiments with rabbits the emulsion failed to justify itself as an anti-frostbite prophylactic agent.

Summing up our findings, we think that notwithstanding the fact that our experiments were of a purely orientational character and that we clearly recognize them to suffer from several shortcomings (chief among these being the varying temperature conditions under which the tests were made in the chamber), we may nevertheless draw some conclusions of a general nature.

First of all our experiments showed that not all fatty substances (in pure or mixed form) are capable of prophylactic action against frostbite. Of all the fatty substances tested by ourselves, ONLY PURE PORK LARD AND GOOSE-GREASE SHOWED A CLEARLY MARKED PROPHYLACTIC EFFECT.

A quite insignificant prophylactic effect was noted in the tests with kombizhir and a still less marked effect with lard compound.

Some of the fats and mixtures which we tested showed themselves to be completely devoid of prophylactic properties and a rabbit's ear when anointed

* Alcoholic soap solution (Tr.).

with them got frostbitten just as severely as the control-ear. In this group we may place lanoline and margoguseline. Nevertheless lanoline needs a more detailed study.

Before putting pure lanoline on trial it would be proper to subject the available "anhydrous" lanoline to a preliminary test to determine the water content, something which was not done in our experiments.

Finally, we have made clear just what fatty substances show a reversed effect, causing a more rapid and acute frostbite when applied to the skin. Among the first of these we must place the poorer grades of vaseline.

The facts which we have obtained seem to us to have a very real significance. They show how careful one must be in choosing a fatty substance for use as a prophylactic agent. This is important not only when using some fatty substances or other in its pure form, but also when the question arises of preparing compound prophylactic ointments.

The effect of such ointments (the tests with BABICSKI's ointment demonstrate this very clearly) will be determined not only by the stimulating substances incorporated in them, but also to a considerable degree by the base used in preparing them. If such ointments are made up on a low-grade vaseline base or on a lanoline base (particularly with water content), then in spite of the inclusion of any number of active substances their effect may turn out to be negative.

The second question arising from our findings is the duration, or to speak more accurately, the time-limit of the prophylactic action of fatty substances. Even the best of them, lard and goose-grease, showed in our tests a prophylactic effect of short duration only. In this connection, it is impossible to state any definite period of time. It would be even more impossible to apply any time-period we did find to the case of humans. A depilated rabbit's ear is too sensitive a test-object as far as cold is concerned; it possesses an extremely labile heat-regulation.

Finally, mention should be made of the likelihood of discovering in some cases a factor in grease-prophylaxis depending purely on the individual, a factor which we observed in rabbits and which may possibly exist in humans.

All the above facts compel us to believe that the grease-prophylaxis of frostbite, even when the very best substances for this purpose are used, is not ideal, and should by no means be given first place among the various means of frostbite prophylaxis. Nevertheless the question requires further study. First of all we should suggest the testing of a considerably larger number of greases and fatty mixtures, and we should establish what physical and chemical properties they have which would explain either a positive or a negative prophylactic effect.

We indeed intend to continue our work along these lines.

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LUNG CHILL*

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and
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Cold is an ever-present consideration under sub-arctic conditions: judging from our own impressions, it seems that it has a significance much greater than we have been accustomed to ascribe to it. We are dealing with cold when we have frostbite of the extremities: we are acquainted with death from severe exposure to cold, that is, death from freezing. In internal clinical practice we are accustomed to consider exposure to cold only as a catarrhal factor, which the majority of us think of as one merely contributing to an ailment, not as one which independently evokes the development of a pathogenic process.

Nevertheless it has been established by many research-workers that cold, besides its local effect, has a still greater reflex action on the whole organism. On the basis of the work of many authors, ANICHKOV points out that the general influence of exposure to cold expresses itself initially in a heightened body temperature, muscular excitation, speeding up and deepening of the respiration, acceleration of the pulse; subsequently there follows a depression of the heart action and of the nervous system, with a lowering of the body temperature. The blood pressure is somewhat heightened at first, but later progressively falls. The excitability of the vasomotor and respiratory centers, also of the peripheral nerves, is lowered. The quantity of glycogen in the organs decreases; the content of lactic acid and sugar in the blood increases; the reserve alkalinity and the level of the plasma proteins drops. In connection with hypoproteinemia in chills, there occurs an acceleration of the sedimentation rate. The metabolic rate, at first heightened (sometimes by more than 20%), is during the latter stages progressively lowered. When the outer integuments are exposed to cold, there takes place a reflex dilation of the blood vessels of the internal organs, particularly those of

* Read at the Army Therapeutical Conference of the 16th of November, 1942, and at the Warfront Conference of the 25th December, 1942.

The term OZNOBLENIYE LEGKIKH [lung chill] was first used by Professor TUSHINSKI, M.D., in a report to the Leningrad Therapeutical Society in 1940, on the basis of his observations during the war with the White Finns. We were not able to locate this work before going to press.

Translator's Note – The word OZNOBLENIYE has often been translated "frostbite", but it is not the ordinary word for frostbite (of the extremities), and indeed conveys quite a different idea. The word is semantically related to OZNOB "chill, shivering fit" and to OZNOBA (ZAZNOBA) "chilblain", thus suggesting (a) surface injury and (b) nerve spasm, shivering. One might translate "superficial frostbite of the lungs", "chilblaining of the lungs", or, as above, "lung chill".

the intestines and those of the upper respiratory passages, with a copious discharge of a watery secretion, a heightened peristaltic action of the intestines and a contraction of the musculature of the bronchi, even to the incidence of bronchial asthma. This effect on the respiratory passages (spasm of the bronchial musculature, hyperemia of the mucosa, copious discharge of mucus, hyperemia and effusion of blood from the lungs together with the formation, in a small number of cases, of pneumonic foci) is manifested when cold damp air is inhaled, particularly through the mouth. All these findings have been supported by experiments on animals.

The pathological process which develops in tissues subjected to freezing has its own unique course (see GIRGOLAV, Transactions of the twenty-fourth All-Union Congress of Surgeons). The initial changes take place latently; no deviations from normal may be established even under microscopic examination. Only upon warming up does there appear a pathogenic process, which must be categorized as an inflammation which develops secondarily upon ground prepared by initial tissue-changes resulting from exposure to cold.

GIRGOLAV ascribes great significance to the disturbance of blood circulation in the tissues which takes place under the influence of freezing. Initially this is accompanied (MOLDOVANOV) by spasm of the blood vessels, then by a protracted dilation thereof, after which spasm (secondary) again follows. These derangements of the blood circulation are, according to GIRGOLAV, of much more influence than the direct action of the cold, as they bring the tissues much more rapidly to destruction than does the direct action of a low temperature. Under the influence of cold, inflammatory changes set in, to which there is later added a secondary inflammation arising from additional infection due to lowered resistance of the tissues.

Fatigue and overtiredness are factors contributing to the effects of cold.

Thus the action of cold, local and general, influences the whole organism. What happens is that the respiratory passages react both to the local influence of cold (inhaling cold damp air) and to the exposure of the external integuments to cold, which brings after it a general cooling of the body.

We have had occasion to observe a number of involvements of the respiratory passages, closely associated, as far as the beginning of the ailment was concerned, with the time the exposure to cold occurred, and distinguished from ordinary ailments of the respiratory organs by a number of peculiarities. The exposure to cold took place in connection with heavy route-marches in blizzards. The patients complained of great general debility, fatigue, considerable shortness of breath. They ascribed their ailment to exposure to intense cold, which sometimes had caused them to lose consciousness.

The first examination usually disclosed a certain degree of emaciation, sometimes a little edema and a little cyanosis of the gums; the heart tones were muffled, pulse from 80 to 120 per minute; the breathing rate was somewhat accelerated --- higher than 20 per minute; percussion over the lungs gave sounds of a more or less tympanitic nuance; respiration was bubbly or somewhat enfeebled, sometimes with an interspersion of dry râles. These indications were usually not such as to point to any serious lung-damage and did not explain the noticeable shortness of breath (dyspnoea) already mentioned. The temperature was either

normal or raised to 38° plus the odd tenth. Subsequently, sometimes for a period of hours and sometimes for a day, the dyspnoea and cyanosis grew and the lungs developed first dry râles and then fine and medium moist râles: the latter were at first heard in separate, often symmetrically placed areas, usually in the lower segments, then they spread to the whole area of both lungs; respiration speeded up to 30 or 40 per minute, the pulse in some patients remained at 80-90, in others it was 120-140 per minute. Later the respiration became bubbly, a copious froth was discharged from the mouth and nose (or there might be a soundless panting, the patient "scooping air in through the mouth"), and death ensued. Circumstances at the time when most of the patients were admitted did not permit us to give concentrated attention to the study of their cases. The novelty of this pathological phenomenon resulted in divergent, inaccurate diagnoses being made in the majority of the cases, such as bronchitis, bronchial-pneumonia, miliary tuberculosis, cardiac incapacity resulting from over-fatigue; consequently we have built up our clinical picture on only ten cases which clearly distinguished themselves from all other usual ailments. In only three cases did recovery take place; nine of them had a fatal outcome. A pathologo-anatomic autopsy on these nine cases confirmed our impression that the ailment was of an unusual nature.

For purposes of illustration we adduce three case-histories:-

B., born 1916. Admitted May 10th, 1942, died May 13th. Taken ill May 3rd. Got soaked, clothing froze, developed chill, unconscious condition about 12 hours. Complained of hoarseness of voice, pains in chest, breathing difficult, shortness of breath, cough, phlegm streaked with blood. Grave general condition. Cyanosis and pallor. Somewhat lowered state of alimentation. Hoarseness of voice. Dyspnoea. Superficial breathing, 36 per minute. Temperature 37.6°. Heart boundaries normal, tone muffled; pulse 120, of little volume. Blood pressure 120/90. Percussive tone in lung of tympanitic nuance, breathing labored, dry râles interspersed, many fine moist râles at the apices. Tongue dry, coated, tonsils swollen and hyperemic. Ventral region soft, painful; edge of the liver projecting below the ribs for a width of one and a half fingers. Stool normal. No alteration in urine. Leucocytosis 10400. Sedimentation rate 42 mm. per hour. During the following days temperature 37.4° to 38°, perspiration, debility, poor sleep, increasing dyspnoea and cyanosis. May 11th, moist râles extending to middle of shoulder blade; May 13th, over the whole area of the lungs. Condition growing worse. Pulse 116 per minute, poor volume; respiration 40 per minute. At 17:00 hrs May 13th, respiration 44, pulse 140 per minute; very acute cyanosis; consciousness dulled, patient sluggish in answering questions; at 23:00 hrs., May 13th, death (the tenth day after severe exposure to cold and beginning of illness).

From the autopsy report: Complete disappearance of subcutaneous and intramuscular fatty tissue. Extensive dense adhesion of the lungs to the subparietal pleura. Mucous membrane of the trachea and bronchi strongly swollen, pinkish red in color, velvety and covered with a purulent mucus.

Lung tissue spongy, considerably emphysematous in the anterior parts; isolated areas of consolidation found in the posterior parts, of greyish pink tinge on section; when pressed, small droplets of pus appear. Bronchioli filled with purulent mucus. Spleen somewhat diminished in bulk, wrinkled, medulla of dark red color. Heart somewhat increased in size on account of dilated right ventricle. Epicardium devoid of fatty tissue. Wall of right ventricle somewhat thickened. Myocardium dull in appearance, brownish tinge. Liver somewhat plethoric. Pathologoanatomic diagnosis: acute catarrhal laryngo-tracheal bronchitis; purulent double bronchiolitis; a small amount of fine pneumonic foci; emphysema of the lungs; dense pre-existing adhesion to subparietal pleura; some hypertrophy of the right ventricle of the heart, general exhaustion.

In this case our attention is arrested by the spread of the process from the larynx to the alveoli; that is, over the whole respiratory tract.

M., born 1903. Admitted May 13th, 1942, died May 15th. Taken ill May 8th after being exposed to severe cold on route-march in blizzard. Severe dyspnoea appeared, with edema of face and legs. Condition very grave. Face and feet swollen. Heavy cyanosis. Dyspnoea: bubbly respiration, 44 per minute. Heart boundaries dilated on left, tones muted, pulse 180 per minute, arrhythmic, poor volume. Lungs: percussive tone tympanitic, breathing labored, interspersed with numerous dry râles. Below both shoulder blades, sonorous medium râles. Cough and phlegm. Tongue coated, moist; ventral region soft; painful edge of liver protruding below rib arch, temperature 38.1° May 14th, temperature 36.8°-39.4°; condition very grave, but still conscious. Cyanosis and dyspnoea still more marked; after 1600 hrs. loss of consciousness; copious discharge of mucopurulent phlegm with admixture of blood, very acute cyanosis; died at 0200 hrs. May 15th (seventh day after being exposed to cold and becoming ill).

From the autopsy report: Absence of subcutaneous and intramuscular fatty tissue. Mucous membrane of larynx and trachea severely swollen, reddened, covered with purulent mucus. Lymphatic nodes below bifurcation of trachea enlarged, soft, of pinkish tinge, tissues succulent. Lungs much enlarged in bulk (their upper portions covering the whole anterior surface of the heart); under the pleura of both lungs numerous fine hemorrhages were discovered. Lung tissue spongy and strongly emphysematous. On section, droplets of purulent mucus issuing from bronchi and bronchioli. Suprarenal glands of ordinary size, cortical layer of uniform yellowish shade (lipoids well preserved). Spleen slightly enlarged, firm, medulla of dark reddish color. Heart somewhat enlarged by dilation of right ventricle. Myocardium of flabby consistency, greyish tinge. On the epicardium a small amount of fatty tissue remaining. Liver

plethoric. Pathologo-anatomic diagnosis: Catarrhal laryngo-tracheal bronchitis; double catarrhal bronchitis; severe emphysema of the lungs; hyperplasia of the lymph nodes below the bifurcation of the trachea; many fine hemorrhages in the pleura of both lungs; general exhaustion.

Microscopic examination: The fine bronchi contain a considerable amount of polynuclears and erythrocytes. Bronchioles filled solid with polymorphonuclear leucocytes and a great accumulation of erythrocytes. The epithelium of the small bronchi severely swollen; consists of 4 to 7 rows of cells and in places forms a quite large protuberance almost completely closing the bronchial lumen. Individual epithelial cells in a condition of mitosis. In some areas the epithelial integument exfoliated by a large accumulation of erythrocytes. Here and there under the epithelium, a large quantity of polynuclears, spreading through the muscular wall of the bronchi and into the external membrane and interalveolar wall of one or two adjacent alveoli. The blood vessels of the bronchi and bronchioli everywhere dilated to an acute degree and filled with erythrocytes; the latter also found within the epithelium. In a number of (microscopic) sections there is visible a penetration of leucocytes from the lumen of the terminal bronchi into the alveoli. The alveoli over a considerable expanse in the vicinity of the bronchi, likewise the bronchioli, are dilated and containing only a few isolated erythrocytes; farther toward the periphery the alveoli contain edematous fluid. The capillaries of the interalveolar walls in these areas are strongly dilated and filled with erythrocytes. Within the adventitia of the blood vessels there are both small and extensive hemorrhages, in places completely exfoliating the external membrane. Alveoli emptied of contents and stretched, with their walls thinned out, for the most part ruptured and forming large orifices (emphysema). In the lumen of individual blood vessels leucocytic thromboses noted. Findings: A mucoid-catarrhal hemorrhagic process over the whole bronchial tree, proceeding from above downwards, and bounded by the terminal bronchi (only two or three of the near-by alveoli involved); wide-spread peribronchial hemorrhage with edema in the peripherally located alveoli; acute emphysema; perivascular hemorrhages; spreading of the inflammatory process from the sides of the lumen of the bronchi through the muscular wall into the surrounding tissue.

Here too the process extended to the whole of the respiratory tract, from larynx to bronchioli.

Z. born 1910. Admitted May 16th, 1942, died May 21st. Taken ill May 10th, after exposure to severe cold during route-march in blizzard. General condition satisfactory. Heart boundaries normal, tones clear, pulse 120, satisfactory volume. Percussive tone in lungs of tympanitic nuance; boundaries of lung dilated, motility somewhat diminished, breathing labored and enfeebled in the lower lungs; a considerable amount of interspersed dry râles. Ventral region soft and not painful. Temperature 38.3°. Later on, temperature fluctuated from 38.3° to 40.4°. The patient was

uneasy; dyspnoea and cyanosis increased. On May 18th, fine regularly occurring moist râles appeared in both lungs below the shoulder blades. From 2300 hrs. May 20th condition very grave, respiration rattling, in both lungs a great deal of regularly occuring medium râles. Heart completely covered by the lungs down to its base; motility of lung edges at a minimum. From one o'clock of the night of May 21st the patient was unconscious: from 5 a.m. a copious discharge of foamy sanguineous fluid from the nose; died at 0750 hrs. (on the 12th day of illness).

From the autopsy report: Condition of alimentation satisfactory: mucous membrane of throat severely emphysematosed, swollen. Epiglottal folds diffusely reddened and acutely swollen. Mucous membrane of larynx, trachea and bronchi markedly red and swollen, covered with purulent phlegm. Lymphatic nodes below bifurcation of trachea enlarged, soft, of pinkish tinge. Lungs markedly enlarged (with their lower segments completely covering the anterior surface of the heart). Pleura of both lungs dotted with numerous fine hemorrhages (the largest of these located in the region of the lower left lobe). Lung tissue uniformly emphysematous. On section, droplets of purulent mucus appear from the small bronchi and bronchia. Lipoid layer of suprarenals well preserved. Spleen somewhat enlarged, firm, medulla of dark red color, plethoric. Heart enlarged by reason of right ventricle being considerably dilated and filled with tangled blood-clots. Myocardium of flabby consistency, grayish shade. Epicardium covered with a considerable layer of fatty tissue of usual type. Liver considerably enlarged, firm, tissue plethoric. Pathologo-anatomic diagnosis: catarrhal pharyngitis with acute edema of epiglottal folds; acute purulent catarrhal laryngo-tracheitis, partly hemorrhagic; wide-spread double purulent catarrhal bronchitis and bronchiolitis: emphysema of both lungs developed to an acute stage; numerous large hemorrhages in the pleura of both lobes of the lungs, particularly in the lower lobe; considerable dilation of the right cardiac ventricle; congested liver and spleen.

Microscopic examination: Desquamation of the superficial layers of the stratified flat epithelium of the suprarenals. This epithelium considerably swollen; basement tissue of the mucous membrane markedly disintegrated and in a diffusely saturated homogeneous mass. Blood vessels dilated to an acute degree and filled with erythrocytes. In isolated areas throughout the thickness of the edematous tissue, both small and extensive hemorrhages found. Considerable disintegration and desquamation of the epithelium of the treachea. On the surface of the epithelium are found small accumulations of polymorphonuclear leucocytes and erythrocytes. Among the disintegrated epithelial cells a large quantity of erythrocytes are present. Blood vessels of the edematous basement tissue of the mucous membrane acutely dilated and filled with erythrocytes. Extensive hemorrhages noted in the neighborhood of the blood vessels. Bronchi and bronchioli solidly filled with polymorphonuclear leucocytes, erythrocytes and flat flakes of peeled-off epithelium. Distributed under the remaining thickened epithelium there are wide-spread hemorrhages. Blood vessels of the mucous membrane acutely dilated with copious content of leucocytes, which in places completely fills up the lumen of the capillaries and small arteries. Alveoli in the neighborhood of the bronchi filled with fibrin and leucocytes. Numerous alveoli containing only a few isolated

erythrocytes. Thinly stretched alveoli emptied of contents and with walls thinned out, ruptured in many places (emphysema). Considerable hyperplasia of lymphoid tissue below the bifurcation of the trachea, with acute hyperemia and hemorrhage. Considerable plethora of the kidney, liver and spleen.

Findings: Descending purulent catarrhal process over whole respiratory tube with fibrinous pneumonia of two or three alveoli in the vicinity of the terminal bronchi; acute emphysema; peribronchial and perivascular hemorrhages.

Here we see the same picture of the whole respiratory passage being affected, and the throat also involved (pharyngitis with edema of the epiglottal folds). The duration of the illness was longer than in the two preceding cases (12 days); the considerable dilation of the right cardiac ventricle probably developed in consequence of this.

In the cases of the three patients who finally recovered, the involvement was not grave; moist râles extended only over the lower segments of the lungs, and dyspnoea was less acutely in evidence.

Treatment employed was in all the cases symptomatic; confinement to bed, hot water immersions, expectorants, camphor, caffeine, oxygen, glucose, calcium chloride, lobeline, strophanthine, in some cases blood-letting. Treatment was possibly effective in the three lighter cases and resulted in recovery. On the development of the grave condition, only oxygen gave temporary improvement.

The clinical picture of these cases may be outlined as follows: - After a serious general exposure of the whole body to cold (often with loss of consciousness), and also considerable local exposure of the respiratory canal (resulting from deeper breathing when walking against the wind), the patients complain of great general debility, fatigue, hoarseness of voice, shortness of breath, cough. Objective study during the first few days enables one to establish only symptoms of laryngo-tracheal bronchitis with certain factors of respiratory insufficiency, namely a little cyanosis and acceleration of breathing, with no real findings as far as the lungs and heart are concerned which would explain this. Subsequently moist râles will develop, most frequently in the lower posterior portions. In the next one or two days the amount of moist râles and the area of their distribution is increased, the cough is intensified, mucus is discharged more and more copiously and an admixture of blood appears in it; symptoms of respiratory and, in some cases, of cardiac insufficiency develop uncontrollably and rapidly (dyspnoea, cyanosis, acceleration of the pulse, dilation of the boundaries of the base of the heart, painfulness and enlargement of the liver).

In the final period there is general excitation with dulling of consciousness, resulting apparently from oxygen starvation of the central nervous system. Cases of medium gravity end in recovery; but when the picture of the involvement is further developed, the most energetic treatment has no effect: even oxygen produces only a temporary improvement.

Our grounds for separating the twelve cases we observed from the general mass of miscellaneous well-known lung ailments are as follows: -

1. the close association of the beginning of the ailment with general exposure to cold;
2. the total nature of the involvement, including the whole respiratory tract from throat to alveoli;
3. the specific character of the involvement, in point of intense swelling of the mucosa, copious exudation, hyperemia and hemorrhages;
4. symmetry and simultaneity of development of the involvement in each lung;
5. the particular nature of the involvement of the lungs (scanty physical data to go on at the beginning, even with dyspnoea already developed; emphysema with a background of severe total bronchitis, with small isolated foci of bronchopneumonia (which however do not appear in all cases);
6. initial appearance of the process in the uppermost segments of the respiratory passages (pharyngitis, laryngitis, tracheitis) and its gradual extension down the bronchial tree;
7. complete ineffectiveness of the whole armamentarium of cardiopulmonary treatment.

This all compels us to suppose that in these cases we have to do with an acute pharyngo-laryngo-tracheal bronchitis, bronchiolitis, and emphysema, developing in consequence of exposure to cold, that is, from the general and local action of cold. Cold is here not an accompanying circumstance, but the primary causative factor. The effect of this physical agency is to inflict a cold-burn or scald and in consequence to evoke a whole series of physico-chemical changes in the tissue of the respiratory passages, leading to the complete collapse of the respiratory function and to the death of the patients.

On the pathogenesis of the process, the most one can do at this time is to frame a hypothesis. It is possible that, in the degeneration of the chilled* surface layers of tissue, substances of histamine type are formed which promote the development of a large-scale edema of the tissues, paresis of the blood-vessels and exudation of blood from them, and cause the tissues to lose their fundamental properties, particularly their elasticity. In consequence, large-scale exudation occurs over the mucosa, with exfoliation thereof; there is intense edema of the tissues, dilation of the blood-vessels and the surrounding tissues; as a result of all this there is constriction of the respiratory canal, embarrassment in inhaling and more particularly in exhaling, increased pressure on the walls of the alveoli, which have lost their elasticity and become stretched; in conjunction with this, there is secondary infection.

To sum up, we have pharyngo-laryngo-tracheal bronchitis, bronchiolitis, small foci of bronchopheumonia, acutely developed emphysema of the lungs, all arising from exposure of the respiratory passages to cold.

The immediate cause of death is oxygen starvation resulting from collapse of the external respiratory functioning, caused by bronchiolitis and emphysema of the lungs. It seems incorrect to call this ailment simply bronchiolitis and emphysema; these terms cover only a part of the involvement and do not reflect

* The same word as in the title (see first footnote) (Tr).

the etiology of the process. We rest on the term OZNOBLENIYE ("lung chill"); the introduction of this term seems to us to be useful, since it fixes our attention on a concrete cause of the ailment, which we can combat.

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ON THE INFLUENCE OF GENERAL COOLING ON THE DEVELOPMENT OF PURULENT INFECTION IN THE LUNGS OF THE RABBIT

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In our previous researches (Arkhiv. Biol. Nauk, vol LIII, 2-3, 1939) it was demonstrated that only after the introduction of a large quantity of microbic bodies (staphylococcus) into the respiratory passages could one succeed in observing the development of a purulent inflammation in rabbits' lungs, in the form of lung abscesses. With the introduction of lesser quantities of staphylococci, it was not possible to produce the development of such a process. Hence, we naturally formulated the hypothesis that the presence of pus-forming micro-organisms in the lower respiratory passages and lungs does not in itself always bring on the development of a purulent process and that, in addition to the presence of the micro-organisms, there are supplementary contributing factors which exert an important influence. It has long been known that general cooling of the organism promotes the incidence of various ailments, especially those of the lungs (e.g. bronchitis, pneumonia, pleurisy, etc), apparently through a decrease in the biological immunizing powers of the organism. LAUCHE thinks that the biological immunizing powers of the human organism and of animals are undoubtedly reduced under the influence of cooling. SCHADE, TENDELOO and others think that general cooling causes a dilation of the blood vessels in the lungs, and this disturbance of the circulation expresses itself generally in a greater sensitivity of the organism to infection. In NENNINGER's opinion, the presence of pathogenic bacteria in the lungs is not enough to cause an infectious ailment; it seems necessary that there should also be some local predisposition. Only with the above-mentioned two factors in combination is the development of an inflammatory process in the lungs possible. The same opinion is expressed by LODE. In autopsies on animals which had died after cooling, WALTHER invariably found hyperemia of the lungs, exudation in the respiratory passages, and also a serous exudate in the pleural cavities.

In rabbits subjected to cooling in water (to 0 - 2°C for a period of 2 - 10 minutes), DÜRCK observed the development of pneumonic foci; the cooling in this case was preceded by a preliminary warming of the animal in a heat-chamber at a temperature of 37°C. Similar results from their own observations are indicated by AFANASYEV, PUCHKOV, ERASTOV, WERTHEIM, BECK and others.

Investigating the limits of lung-tissue resistance to cooling, LIPARI injected rabbits intratracheally with pneumococci; he then left some of the animals under normal conditions and subjected the others to cooling. Inflammatory changes in the lungs were observed only in the latter. Similar findings were adduced by LODE, who shaved the fur off guinea-pigs, then wrapped some of them

* Co-author of article on page 43 (Tr.).

in warm cloth and left the others clean-shaven. After inoculating all the test animals with FRIEDLÄNDER's bacillus he put them in a cold place. He observed that the majority of the shaved animals developed pneumonia while the unshaven ones remained in good health.

From the above findings it is abundantly evident that general cooling of the organism favors the development of infection and intensifies it whenever it is present. For this reason we thought that it would be not without interest to trace experimentally how general cooling affects the incidence, development and course of an inflammatory purulent process in the lungs, induced by the aspiration of microbe bodies (staphylococcus) by way of the trachea. In addition, we endeavored to find out how the condition of the pleura might be influenced by the changes in the lung tissue which took place under these circumstances. Thus, with due consideration to the fact that such involvements are very frequent in humans, we undertook the task of clarifying the effect of cooling and infection, acting together, as a complex factor, on the development of experimental pleurisy. This is particularly of interest because in the literature there are hints that the overwhelming majority of exudative and purulent pleurisies develop in conjunction with different types of pneumonia. We used what we knew to be slight doses of staphylococcus culture, with which in our previous experiments neither pneumonic changes nor abscesses in the lung tissue had ever been observed. When using rabbits, we ruled out immersion of the whole animal in ice-water as a means of producing cooling, which was the way PUCHKOV, DÜRCK, ERASTOV, LAVROV and others went about it, because, judging by data in the literature, this kind of cooling will itself promote the development of inflammatory changes in the lungs.

PROCEDURE

Thirty rabbits, males, were given a 24-hour culture of staphylococcus, concentration 50 million/cm^3, by way of trachea. This culture, pathogenic for rabbits, was taken from rabbits which had developed pleurisy as a result of opening the pneumothorax. The intratracheal inoculation of the rabbits was carried out in the following manner. With proper aseptic precautions, an incision 2 cm long was made along the median line of the neck, through the skin and the subcutaneous tissue; the anterior surface of the trachea was exposed, about 2 or 3 cm down from the epiglottis. A suspension of staphylococcus aureus was introduced with a syringe between the cartilages into the lumen of the trachea. The culture was diluted to a standard strength. Eight of the test rabbits, injected intratracheally with staphylococcus, were placed in a room at a temperature of 15 or 17°C. The remainder (22 rabbits) were immediately after inoculation put outdoors at atmospheric temperatures ranging from -20°C through -17°C, -14°C, -12°C, -7°C, -6°C, -4°C. (see table). Another eight rabbits for control purposes were subjected to general cooling without having been inoculated as above. The body temperature of the rabbits under cooling fell on the average 2 to 2.5°C. All the test-rabbits lived 8 to 20 days after this. The majority of them had to be killed

(by a blow on the back of the neck); only a few of them died from the infection. Pieces of the lung for microscopic examination were fixed with 10% formalin and 96° alcohol. Sections were stained with the usual dyes, and also by the WEIGERT-HART method for the elastic tissue, and by the GRAM method for the microbes.

From the attached table it is seen that the eight test-rabbits inoculated with staphylococcus and left in the warm room, just like the eight controls which were merely cooled without being inoculated, did not show any development of inflammation in the lungs. It seemed that they kept their resistance both to the injections and to single short periods of cooling. These control-animals are included in the table of our experimental results, and the changes which took place in them should be compared with the changes observed in the test-rabbits which were inoculated with staphylococcus and subjected to general cooling.

The changes in the lungs of the control-rabbits [in the table] were on the whole of a nature not very different from those noted in previous experiments on intratracheal inoculation with small doses of staphylococcus culture. Under microscopic examination, the lung-tissue of these control-rabbits was nearly everywhere seen to be aerated, with the inter-alveolar septa thickened in some places by edema, in other places thinned out. The alveoli contained no exudate. Only in isolated cases (644, 613 et al.) were there seen, both in the deep and the sub-pleural portions, dilated lymphatic vessels in which granular leucocytes were found. And only in one or two cases, here and there in the protoplasm of the alveolar phagocytes, did we find the remains of phagocytized Grampositive cocci (in a state of fine granular decomposition).

Thus we should once more emphasize that in these control-rabbits, which were followed up for the same length of time as the test rabbits, the lung tissues remained for the most part little changed. A completely different picture of changes was seen in the lung-tissue of the other rabbits [in the table] which were subjected to a general short-term cooling in addition to the intratracheal infection with small doses of culture-staphylococcus.

In nearly all the 22 cooled and intratracheally infected animals, in spite of the varying degrees of cooling (see table), we observed the development in the lungs of an inflammatory process of the interstitial pneumonia and bronchopneumonia type. Moreover in ten of the rabbits we observed the development of pneumonic foci in combination with fibrino-purulent pleurisy, often on both sides (fig.1), and in addition lung abscesses developed in two cases.

Under microscopic examination the nature of the changes and the type of inflammatory process in the lungs were quite diverse, but symptoms of interstitial inflammation predominated. Also the interalveolar septa were considerably thickened; they were impregnated with a serous exudate in which there was quite a lot of inflammatory cellular matter of various origins. Here we could see mononuclear leucocytes (polyblasts) in large numbers, cells of the nature of alveolar phagocytes, granular leucocytes (part of them in a state of decomposition), and also a fair number of erythrocytes. Blood vessels, for the most part veins and capillaries, were considerably dilated, with marginal stases

Fig.1. Double fibrino-purulent pleurisy

TABLE

After intra-tracheal infection with staphylococcus culture the test-rabbits were left at a temperature of $-2^{0}C$ to $-20^{0}C$ for 15 minutes

Rabbit No	Atmos. temp.	Lived how many days	How died	Macroscopic	Microscopic
	Control. Test.				
601	-20	10	Killed	Fibrino-purulent pleurisy. pneumonic foci in left lung.	Symptoms of interstitial pneumonia. Fibrino-purulent pleurisy.
602	-20	10	Died	Double fibrino-purulent pleurisy.	Ditto.
603	+17	10	Killed	No fluid content in pleural cavities.	Lung tissue everywhere contains air.
196-a	-20	8	Died	Small abscess in the lower lobe of right lung.	Purulent necrotic focus in the right lung, symptoms of interstitial pneumonia of both lungs.
195	-20	8	Killed	Pneumonic foci in the right lung.	Symptoms of interstitial pneumonia.
197	+17	8	Killed	No fluid content in pleural cavities.	Lung tissue everywhere aerated; hemorrhagic foci seen only here and there.
186	-17	8	Died	Pneumonic foci in posterior segments of both lungs.	Symptoms of interstitial pneumonia.
187	-17	22	Died	Massive abscess in right lung.	Abscess of the lung, also interstitial pneumonia.
188	+16	8	Killed	No content of fluid in pleural cavity	Interalveolar septa thickened here and there as a result of edema.
604	-14	11	Died	Fibrino-purulent pleurisy. pneumonia in massive foci.	Pneumonia, in places catarrhal, in places catarrho-purulent.
605	-14	11	Died	Ditto	Ditto
613	+16	11	Killed	No content of fluid in pleural cavities	Lung tissue almost everywhere aerated, with edematous regions seen only here and there in interalveolar septa.
626	-12	12	—	Fibrino-purulent pleurisy. Sprinkling of pneumonic foci in both lungs.	Fibrino-purulent pleurisy. Symptoms of interstitial pneumonia; in places foci of abscessed pneumonia.
627	-12	12	—	Ditto.	Ditto.
628	-12	12	—	Ditto.	Ditto.
629	-12	11	—	Ditto.	Ditto.

Rabbit No.	Atmos. temp.	Lived how many days	How died	Macroscopic	Microscopic
	Control. Test.				
625	+15	12	—	No fluid content in pleural cavities	Lung tissue for the most part aerated; interalveolar septa only here and there infiltrated with edematous fluid.
98	− 7	6	Died	Fibrino–purulent pleurisy. Scattering of pneumonic foci in both lungs.	Fibrino–purulent pleurisy. In places, foci of broncho–pneumonia, in places a considerable infiltration of inflammatory elements in the interalveolar septa.
153	+15	6	Killed	No content of fluid in pleural cavities.	Lung tissue everywhere aerated.
673	− 6	15	Killed	Pneumonic foci in lower lobes of both lungs.	Symptoms of interstitial pneumonia.
674	− 6	17	Died	Ditto.	Ditto.
675	− 6	11	Killed	Ditto.	Ditto.
676	− 6	12	Killed	Ditto.	Ditto.
679	− 4	8	Killed	Ditto.	Ditto.
681	− 4	8	Died	Ditto.	Ditto.
680	+15	10	Killed	Internal organs show no changes.	Interalveolar septa edematous here and there; alveolar lumina narrow at these places.
646	− 2	15	Killed	Fibrino–purulent pleurisy on right side. Serous pericarditis. Pneumonic foci in right lung.	Symptoms of interstitial edema and fibrino–purulent pleurisy of the right lung.
647	− 2	15	Killed	No fluid content in pleural cavities.	Interalveolar septa edematous here and there; lumina of alveoli narrow at these places.
645	− 2	15	Killed	Ditto.	Ditto.
644	+15	—	—	Ditto.	Lung tissue almost everywhere contains air; only here and there interalveolar septa infiltrated with edematous fluid.

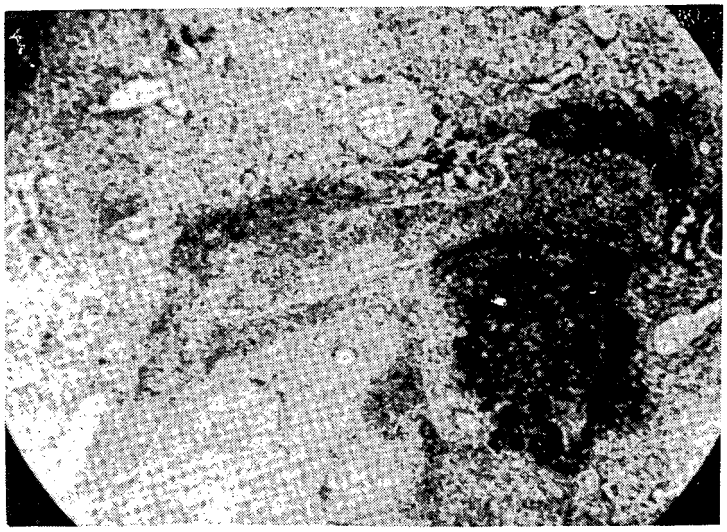

Fig.2. Cell mass of purulent focus spreading to bronchial wall.

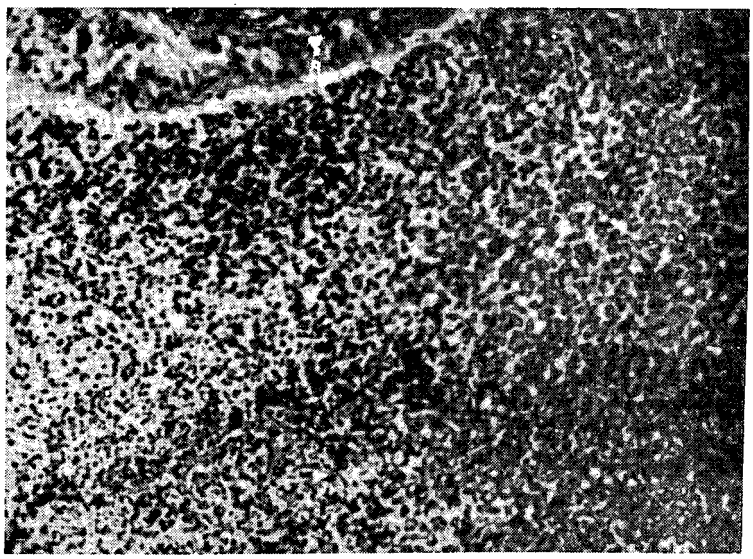

Fig.3. The same preparation, greater enlargement. Bronchial wall destroyed by lung abscess breaking through into bronchus.

Fig. 4. Massive abscess in left lung.

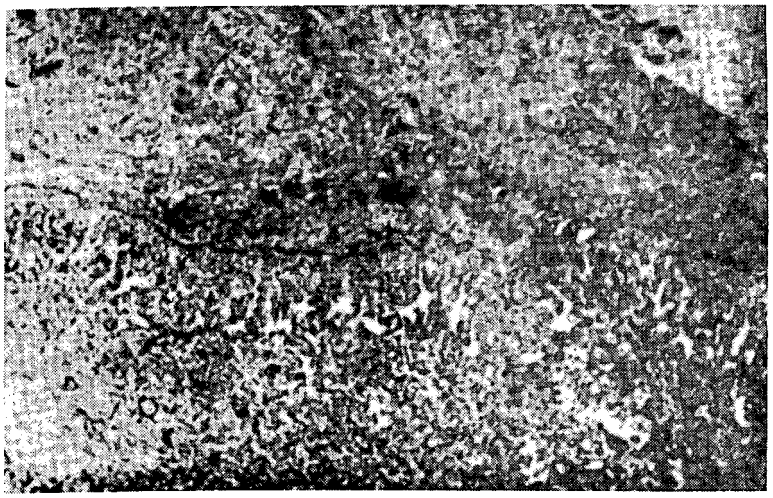

Fig. 5. Fibrino-purulent pleurisy. Elastic plexus of pleura intact.

of leucocytes here and there in the lumen. Accumulations of lymphoid and polyblastic matter* were not infrequently seen around the dilated vessels. Around the larger veins and arteries, these areas infiltrated with lymphoid cells were particularly extensive and filled with mononeuclear leucocytes and erythrocytes.

As for changes on the part of the bronchi, there was no complete uniformity. In places the lumen of the bronchi might be dilated, containing a small accumulation of serous exudate, in which isolated mononuclear leucocytes, some homogenous masses (apparently a secretion-product of the bronchi), and here and there exfoliated cells of the bronchial epithelium were to be seen. The epithelium of the bronchi was in these cases succulent, the cell boundaries sharp. The basic connective tissue and likewise the muscular layer of the bronchial walls showed no changes. Around these practically unchanged bronchial walls the lymphatic vessels here and there were charged with serous fluid, and isolated mononuclear leucocytes were seen in them.

At the foci of interstitial inflammation, such rather insignificant changes in the bronchi were however quite rarely observed. Most often the lumina of the medium and small bronchi contained a quite abundant cellular exudate consisting of decomposing leucocytes, exfoliated cells of the bronchial epithelium, and erythrocytes. In places the bronchial epithelium was partially or wholly stripped away from the tunica propria. In such cases the cells of the epithelium had a dystrophic appearance (swelling of the cells, karyolysis and so forth). In the odd case (605, 629, 196, 602) a considerable inflammatory infiltration was seen around the walls of the bronchus, the lumen of which was filled up with a cellular exudate consisting of decomposed leucocytes. Often one could also see a direct passage between the exudate in the lumen and the foci of inflammatory infiltration surrounding the bronchus. Moreover the cell-decomposition in the bronchial exudate was in no way distinguished from the decomposing mass of granular leucocytes in the foci adjacent to outer bronchial wall. In these cases the continuity of the bronchial wall had been destroyed, and among the decomposed cells one could still see remnants of the broken-up cells of the bronchial epithelium. One could agree that in the latter cases exudate from the lung tissues surrounding the bronchi had penetrated into the bronchial lumen.

The considerable leucocyte-accumulation in the lumen of the bronchi testifies that the latter also were involved in the inflammatory process. It is still not fully clear whether purulent bronchitis developed secondarily, or whether inflammatory changes in the bronchi had progressed simultaneously with the symptoms of interstitial pneumonia. True, in some cases the changes in the bronchi were very feebly in evidence, while the interalveolar septa were densely infiltrated with inflammatory matter. Yet side by side with this it was possible in many cases to see distinctly a passage between an inflammatory focus and the bronchial lumen, or more properly speaking a bursting of the purulent focus into the bronchus (figs. 2 and 3).

From this description it will be already evident that in our tests the symptoms of interstitial inflammation of the lung were not limited to the interalveolar septa; the quite considerable changes on the part of the bronchi testify that they also are involved in the inflammatory process. Furthermore along with the symptoms of purulent bronchitis and inflammatory infiltration in

* I.e., large mononuclear cells. (Tr.)

the interalveolar septa, we frequently encountered foci of inflammatory edema and catarrhal inflammation in the lungs. And in one and the same specimen, along with thickened interalveolar septa which made the lumina either considerably constricted or quite indistinguishable, alveolar lumina were also seen which were filled up with serous exudate containing isolated leucocytes, erythrocytes and exfoliated cells of the alveolar epithelium. The interalveolar septa were then somewhat edematous, and the capillaries and veins in them dilated and full of blood. Moreover in some places one could see a considerable accumulation of decomposing leucocytes, that is, in these cases there was a purulent focus developing in the lung. In the foci of inflammatory purulent infiltration which we describe, we often found small clusters of Gram-positive cocci, in some places free, in some places in the protoplasm of individual macrophages or alveolar phagocytes.

In rabbit No.605 symptoms of large-focus* catarrhal pneumonia predominated, although here just the same we found thickened interalveolar septa, infiltrated with inflammatory matter. In isolated areas of the odd lung we indeed observed cellular decomposition and incipient inflammation of the lung tissue (abscess-pneumonia).**

In two cases from our material, we observed abscesses of the lungs, which resembled each other to an extraordinary degree. In one of these cases (196) a massive focus of suppuration, with its center consisting of a decomposing mass of leucocytes threaded through with Gram-positive cocci, was situated in the deep portions of the lung and only partially extended to the pleural surfaces. In the second case (187) the purulent focus had developed directly under the pleura (fig.4). The necrotic zone in both cases was surrounded by a layer of granular leucocytes, with the greater part thereof in a state of decomposition; here and there among the leucocyte cell mass one could see cellular matter from the bronchial epithelium, remnants of muscle cells, aneuclear complexes of alveolar epithelial cells, all likewise in a decomposing state, and also homogenous masses which stained strongly with eosine. The intact interalveolar septa on the boundary of the necrotic focus were impregnated with edematous fluid, the blood-vessels in them were dilated and full of blood. Here and there lung alveoli were seen containing air; the interalveolar septa at these points were thin; the elastic network of the pleura was almost everywhere intact, being considerably disintegrated and thinned out only over the necrotic focus. In case 187 a considerable accumulation of polymorphonuclear leucocytes was seen on the surface of the pleura; while in case 196, in spite of the fact that there was quite a broad zone of purulent inflammation under the pleura, no accumulation of leucocytes on the surface of the pleura was distinguishable.

Around the subpleural lung abscesses in these cases, we were unable to observe any break-through into the pleura, nor any empyema of the pleura developed in this way.

As for changes on the part of the pulmonary pleura, quite often, along with inflammatory changes in the parenchyma of the lung predominantly of the interstitial pneumonia type, we observed a development of exudative pleurisy. In most of these cases the quantity of exudate amounted to 50 - 100 cm^3, but we

* Lobular (Tr.)

** Suppurating pneumonia (Tr.)

did not observe any compression of the lung on account of the accumulation of fluid in the pleural cavity; we never once saw a displacement of the mediastinal organs or heart toward the unaffected side, such as had taken place in our previous experiments with opened pneumothorax (see previous researches); that is, we never saw any development of what was strictly definable as empyema of the pleura*.

The above-mentioned cases of exudative pleuritis were pre-eminently of a fibrino-purulent nature. Then (and sometimes in other cases) there was a considerable mass of fibrin in deposits on the surface of the pleura (fig.5). These masses were quite densely infiltrated with granular leucocytes in a state of decomposition. Among the mass of decomposition, clusters of Gram-positive cocci were not infrequently found. In places the subpleural interalveolar septa also were copiously laced with polymorphonuclear leucocytes, in the protoplasm of which the phagocytized remains of cocci were found. The lymphatic vessels of the walls, under the pleura, were often dilated; a quite large quantity of granular leucocytes could be seen in them. The elastic network of the pleura was then nearly always intact; only here and there, in cases of very marked inflammatory infiltration of the walls under the pleura and granulation of the tissue or incipient scar-formation, did the elastic fibres take the appearance of a broken line, or in places a dotted line. We never once observed a subpleural focus of inflammatory infiltration to break through to the surface of the pleura, nor a lung abscess to break through into the pleura. Only in one case did a purulent infiltration in the subpleural regions of the lung extend so far as to come into direct contact with the elastic fibres of the pleura. The latter became more disintegrated and thinned out, and in places their continuity was broken, yet on the surface of the pleura no exudation nor cellular infiltration was observed.

Our findings justify the belief that with a bronchogenic infection under the conditions of our experiment, there is no break-through of lung abscess into the pleural cavity; in this respect our experimental findings contradict the statements of a number of clinicians (SPASOKUKOCSKI, CSIRLINA, UDOVIN, ZHMUR, AKATOV, ORLOV, GRIGOROV, et al.), that all cases without exception both of empyema of the pleura and of purulent pleuritis are the result of minute imperceptible abscesses breaking through into the pleural cavity. From the data of our last series of tests, we formed the definite idea that the inflammatory infiltration does undoubtedly get across from the lung tissue to the pleura, but this does not take place by way of a break-through; rather, the process is propagated by the lymphatic route and in a continuous manner. The spread of infection by this route is fully possible under the conditions of blood and lymph circulation in the interalveolar septa under the pleura and within the pleura.

CONSIDERATION OF THE FINDINGS

From the data adduced in our most recent, and also in our previous researches (cf. our second report) it is seen that the intratracheal injection of relatively small quantities of microbic bodies (staphylococcus culture, 1 to 50 million per cm^3) does not produce any acute changes in the lungs of a rabbit, even in the later stages. The whole process manifests itself only in an acute hyperemia and edema of the interalveolar septa. No development of purulent

* Definitions of the concepts "purulent pleurisy" and "empyema of the pleura" are given in our first report (Arkhiv biol. nauk, vol. L, Nos. 1 – 2).

foci in the lung may be detected, nor any noticeable changes of an inflammatory character on the part of the pleura. This edema of the lung tissue is most often a reversible condition. However, if rabbits thus treated are exposed to general cooling immediately after being injected, for instance if they are left outdoors in winter at temperatures of -20, -17, -14, -10° etc. for a period of 15 to 20 minutes, then as a rule they will develop inflammatory changes in the lungs. Most frequently the autopsy revealed symptoms of interstitial pneumonia, often in combination with focal bronchopneumonia, and sometimes lung abscesses as well. Cooling alone without the intratracheal infection did not produce such changes in the lungs. This gives us a basis for supposing that cooling promotes the development of inflammatory changes in the lungs if microbes are simultaneously injected intratracheally, apparently in consequence of a lessening of the immunobiological resistance of the organism. It would be difficult to explain otherwise the fact that, under identical conditions as far as infection is concerned, animals left in a warm room did not develop pneumonia, while in animals exposed to cooling inflammatory lung-changes were manifested in an acute degree.

The facts adduced compel us to direct more of our attention to the derangement of the general state of the organism which is caused by cooling. In this connection we must agree with the statements made by many authors (LAUCHE, F. Ia. CHISTOVICH, RENAUD, CSIRLINA, SKVORCSOV), who point out micro-organisms frequently encountered in the body in a dormant state may become pathogenic and promote the development of (for instance) pneumonia only when the organism is subjected to some influence which seems to cause a regulatory upset in the vascular and nervous systems. In the opinion of F. Ia. CHISTOVICH, sensitivity may be produced even by products of the organism itself, substances which form as a result of a cold or chill; it is well known that this state of chill lowers the resistance of the organism. This circumstance apparently plays no small rôle in the incidence of infections of the grippe type, which as is well known often occur after general cooling (GLINCHIKOV, KONCHALOVSKI et al., HEINRICH). MUDD and his associates, NEDZEL et al. all mention the intimate connection between cooling of the upper respiratory passages and the subsequent development of grippe and pneumonia. Not without interest also are the observations of REINEBOTH, HINES and BROWN, BRAD and FEIL, who point to the considerable increase in blood pressure under the influence of a low temperature acting on the vasoconstrictors. According to the findings of ERASTOV, SCHADE, TENDELOO et al., when animals are cooled (by putting them in water at a temperature of -0 or -2°C), a "profound physicochemical change in the blood and vascular walls" takes place in the lungs. Associated therewith one may observe a disturbance of the characteristic blood data, a heightened coagulability, and so forth. PUCHKOV and YAKUSHEVA have shown that the coagulability of the blood rises during cooling and falls during the re-warming of an animal.

It is difficult to say whether general cooling always has the rôle of a pre-disposing factor in the development of an inflammatory process in the lungs, or whether it is the cooling itself which causes this process to develop. Apparently it is necessary to consider both these possibilities in each individual case of an inflammatory process developing in the lungs. It only remains to emphasize the fact that, in our data, the general cooling was undoubtedly a condition favorable for bringing out the pathogenic powers of micro-organisms injected.

Fig. 6. Lymphatic vessels of pleura dilated, packed with granular leucocytes.

Our findings relative to the development of experimental pneumonia in the rabbit (both interstitial and bronchopneumonia) permit us to believe that in lung tissue under the influence of intratracheal staphylococcus infection there are initially symptoms of a considerable edema of the interalveolar septa, and locally of the alveoli as well. In some of the rabbits there subsequently took place a focal infiltration of polymorphonuclear leucocytes and the formation of foci of purulent inflammation. Similar changes, in the form of large-scale edema, are mentioned by KRAUSPE and THEISS, ROBERTSON, COGGESHALL et al. in researches on the lungs during the period immediately after injecting pneumococcus culture into the respiratory passages. CSINSERLING and SHTEIN's careful histological investigation of material at various stages of pneumonia (both the early and the later stages) have shown that in humans too the first, primary stage of both croupy and bronchial pneumonia is an edema of the lung alveoli.

Quite often in our cooling experiments we found fibrino-purulent pleurisy developing along with the pneumonia. In this case the transfer of the inflammatory infiltration from the subpleural portions of the lungs to the pleura took place mainly along the lymphatic paths. The lymphatic vessels in the subpleural regions were dilated; in their lumina many granular leucocytes could be seen, and here and there individual phagocytized cocci were found. This was particularly prominent in those regions where the surface of the pleura was free of fibrinous deposits (fig.6). In cases where there was interstitial pneumonia, and when there were lung abscesses of bronchogenic origin, we were not once able to distinguish any place where the inflammatory process had been transferred to the pleura by way of a break-through of the subpleural foci into the pleural cavity. Even if we admit the possibility of such a method of propagation of the purulent process, then the integrity of the subpleural portions of the lung-tissue must have been damaged. Yet in all our cases of lung abscesses of bronchogenic origin, and likewise of pneumonic foci, no necrotic decomposition or sloughing of lung tissue could be seen.

Often a passage could be found between the foci of inflammatory infiltration and the cellular exudate in the bronchial lumen, and in some places the wall of the bronchus was destroyed, apparently as the result of a purulent focus breaking through into its lumen. Evidently this is indeed the most frequent possible method of "spontaneous" healing of a lung abscess, by way of the pus being drawn off through the bronchi, a fact to which many clinicists have pointed (SHAAK, TUSHINSKI, LINBERG, GABE, WALSEL, EDWARDS et al.).

CONCLUSIONS

1) Intratracheal inoculation of staphylococcus culture in small doses, in combination with subsequent general cooling, will cause the development of pneumonic foci in the lungs of rabbits. When injected with the same dose of culture, without cooling, and also when cooled without being inoculated, no such changes are produced.

2) The first stage of this process manifests itself in the development of a quite wide-spread edema of the interalveolar septa, and in individual cases of the lung alveoli as well. In the concentrations of edematous fluid a fairly large quantity of polyblastic matter may be found. In the later stages of the process, focal accumulations of granular leucocytes appear in the edematous

tissue and here and there alongside it.

3) Under conditions of both interstitial pneumonia and bronchopneumonia, the propagation of the inflammatory process from the lungs to the pleura proceeds mainly along the lymphatic channels and continuously, in the form of lymphangitic symptoms.

4) The pulmonary abscesses which are formed when intratracheal inoculation is combined with cooling do not break through into the pleural cavity. In our experiments, fibrino-purulent pleurisy may be observed to develop quite often, in consequence of the spread of the inflammatory infiltration and of the microbic bodies, which takes place mainly by lymphatic routes.

5) The existence of passages from the foci of inflammatory infiltration in the tissue surrounding the bronchi to the lumina of the latter testifies to the break-through of the purulent foci of the lung tissue into the bronchial lumen.

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ON THE INFLUENCE OF RAPID RE-WARMING ON BLOOD PRESSURE AND RESPIRATION IN ACUTE HYPOTHERMIA

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In recent years the school of S.S.GIRGOLAV has initiated a revision the seemingly unshakeable thesis of the necessity of gradual warming up in frostbite. A number of works by S.S.GIRGOLAV's associates (T.ARYEV, SHEINIS, MOLDAVANOV and others) have demonstrated the favorable effect of speedy warming on the progress of frostbite cases. In cases of general cooling (hypothermia) too, speedy re-warming is according to the statements of these authors less dangerous and more effective than gradual re-warming.

An argument put forward against speedy re-warming of an overcooled subject is the fear that rapid dilation of the peripheral vessels under the influence of heat may lead to a sharp fall of blood pressure, or in any case to low blood pressure, and thus aggravate the symptoms of vascular collapse, with all the consequences thereof. Nevertheless, still earlier experiments and observations during recent years have shown that the danger of this is in any case small.

It seemed to us that it would be of importance to test once again the effect of rapid warming on the blood pressure in acute general hypothermia. For this purpose we instituted tests on rabbits.

> The animals (rabbits) were attached to a board and a canula introduced into the carotid artery for purposes of registering the blood pressure; respiration was registered by a pneumographic belt connected to a recording drum. The temperature in the rectum was measured with a thermocouple. The board with the animal attached was placed in a large trough and cold water-and-snow mixture at a temperature of about 6°C - 7°C was poured in, covering the whole body except the head and part of the thorax. In this bath the rabbits remained until a state of acute hypothermia was reached, when the cold water was rapidly poured off and replaced by warm (at about 38° - 42°C), the blood pressure and respiration being registered without interruption throughout. Thirteen tests in all were made; all of them were carried through without narcosis.

In cooling, symptoms developed in our rabbits in a typical manner and quite swiftly. After an initial period of excitation ... heightening of blood pressure, uneasiness, deepened respiration and (later) muscular tremor ... there followed a depressed state. The rabbit became motionless; while the blood pressure was still quite high a marked bradycardia developed, which progressed steadily right to the end of the cooling period, then there appeared a lowering of the

blood pressure, a slowing up of respiration, and decline of temperature in the rectum. In special experiments we rechecked the old finding that the bradycardia was not corrected by injection of atropine nor by bilateral vagotomy.

Hence, vagus nerve activity is not the basic cause of bradycardia in overcooling; nevertheless we must note that in two cases of complete stoppage of the heart at the high point of the cooling process the prompt section of both vagus nerves evoked an immediate, even if temporary, restoration of the heart action. Thus up to the very end of the agonal stage of hypothermia these nerves show some inhibiting influence on the heart.

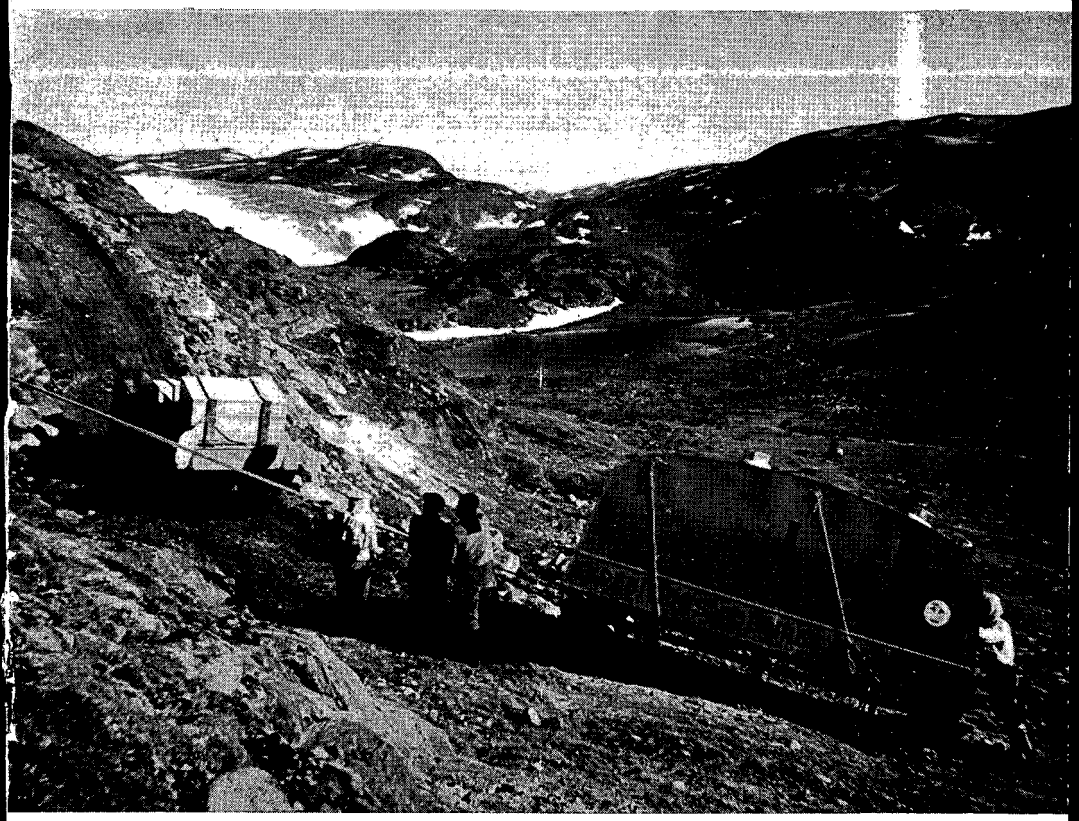
Adrenaline too in the later stages of the experiment will bring about a sharp increase in the blood pressure, though somewhat less than that obtained with adrenaline before cooling; the rise takes place quite gradually, but the pressure stays up much longer. One might think therefore that in hypothermia adrenaline is broken down in the blood much more slowly. It is interesting to note that the rhythm and amplitude of the pulse during the adrenaline reaction remain, in the cooled state, almost without modification.

After 1 1/2 to 2 hours the blood pressure usually dropped to 10-20 mm of mercury, the body temperature fell to 16°C - 14°C or lower. In this condition there occurred in three cases a stoppage of respiration, then of the heart, and the rabbits died. Hence this is really a pre-agonal stage. After reaching the condition described, the replacement of the cold water with warm was carried out. Within 5 to 10 minutes after pouring in the warm water, the blood pressure in the majority of cases began to rise, and in 40 to 50 minutes reached two-thirds (or more) of its initial value; the bradycardia disappeared very rapidly; within 3 to 5 minutes after putting into warm water the pulse rate picked up very much, the amplitude of the pulse decreased, respiration speeded up and became deeper. In not one single test did we observe any noticeable lowering of the blood pressure which could be linked up with the transfer to the warm water. After an hour or an hour and a half we removed the rabbits from the bath, sewed up the incisions, dried them off and at a body temperature of 25 - 28° placed them in a light-and-air bath for further warming up. The greater number of the rabbits soon recovered; within an hour or two they were sitting up and showing a lively reaction to stimulations. Nevertheless in spite of this, and in spite of the fact that the body temperature was back to normal at the time warming was stopped, most of the rabbits died next day. Some of the rabbits did not show this temporary stage of general recovery: although after two hours of warming up their body temperature was back to normal, they continued to lie in a state of complete adynamia and died in a few hours' time. This "retarded death" is probably connected with some irreversible changes in the central nervous system.

In any case our experiments definitely show that in the stage of maximum lowering of blood pressure, at the most intense point of the hypothermia, rapid general re-warming does not evoke any further decline in pressure; on the contrary it brings about a rapid rise.

One should nevertheless bear in mind that the vascular skin-reaction in the rabbit is sharply different from the reaction in man, and one must be properly cautious in extending these findings to humans.

THE FRENCH POLAR RESEARCH EXPEDITIONS 1948—1951



Greenland. Trailer-laboratory climbs toward the Ice Cap

a report by PAUL E. VICTOR

"The two poles have been reached. By their physical efforts and energy men have realized the dream of generations. Modern aviation has enabled us to confirm earlier discoveries and to fly over uncharted areas. For a moment it seemed that the task had been accomplished and that odysseys to the Arctic and Antarctic had been abandoned. . . . But today men's eyes are more than ever turned toward the polar regions. The period of making records, which were also fruitful in scientific discoveries, is closed; the period of development has begun. The vast icy stretches of polar lands and seas hold both economic and scientific treasures. Some of the first are already known and are being exploited; the search for the second will lead to the discovery of others. Here is a magnificent field of action for pure and applied science. Do we ever know what results the most abstract studies will yield?"

Commandant Jean-Baptiste Charcot (1867-1936)

CONTENTS

THE FRENCH POLAR RESEARCH EXPEDITIONS 1948-1951

Director, Paul E. Victor

Arctic: Greenland Ice Cap Expeditions 1948, 1949-1950, 1950-1951
Leader, Paul E. Victor

Antarctic: Adélie Land Expeditions 1948-1949 and 1949-1951
Leader, André F. Liotard

PART I—ORGANIZATION AND PURPOSES

1—Organization

ACTING upon a project drawn up by Paul E. Victor, the French Government authorized the Ministry of National Education to grant funds for the organization of two polar research expeditions: an Arctic expedition to the Greenland Ice Cap and an Antarctic expedition to Adélie Land.

The organization and direction of these expeditions are the responsibility of Paul E. Victor, assisted by a six-man Board of Directors.

The research programs of these expeditions are set up by a Scientific Commission headed by Charles Maurain, of the French Academy of Sciences. This Commission also determines the methods to be employed and evaluates the results obtained.

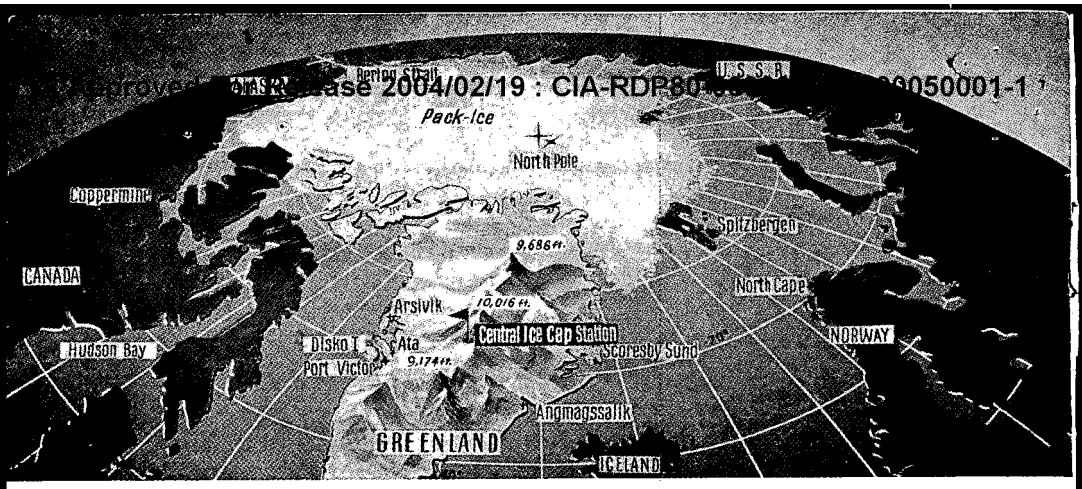
The Greenland Styrelse authorized the Greenland Expedition in May 1947.

2—Purposes of the Arctic Expedition (Greenland Ice Cap)

GREENLAND is covered by a desert of ice about 1,700 miles long and 600 miles wide. Its elevation is 10,000 feet and its thickness varies between 6,000 and 9,000 feet. Aside from the need for valid scientific data concerning this ice sheet, by far the largest in the Northern Hemisphere, there is urgent practical need for reliable information about the weather conditions that prevail over it, for Greenland lies athwart several of the great air routes of the future. Furthermore, the Greenland Ice Cap's influence on Northern Hemisphere weather, important as it is, is still, as yet, practically unknown.

The French Arctic Expedition proposes mainly to study the Greenland Ice Cap from the following points of view:

a) profiles of the surface of the Ice Cap by geodetical measurements;
b) profiles of the substratum by seismic soundings;
c) glaciology, especially accumulation and dissipation of the firn, and temperatures and densities both on the surface and within the deeper layers of the ice;



The Arctic Region

d) gravimetric profiles and studies on gravity;
e) climatology and meteorology (including radiosondes);
f) atmospheric physics.

Secondary purpose of the Greenland Expedition is to carry on research on certain questions in the fields of geophysics, natural sciences and biology.

3—Purposes of the Antarctic Expedition (Adélie Land)

ADÉLIE LAND was discovered in 1840 by the French explorer Dumont d'Urville. No landing was made on the mainland. The hinterland was cursorily visited in 1913 by the western group of Sir Douglas Mawson's expedition.

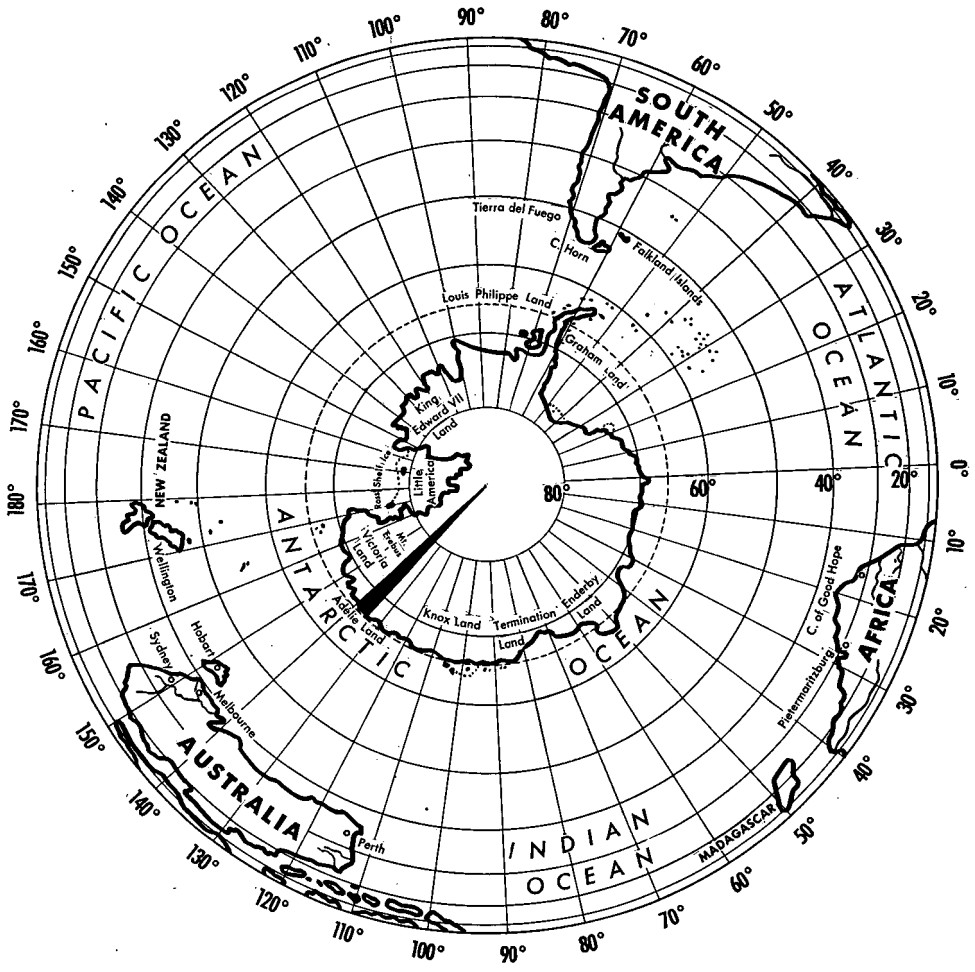
The purpose of the French Adélie Land Expedition is to study Adélie Land's coast, waters and weather conditions during summer investigations aboard ship, to land an over-winter party, and to carry on one or, if possible, two years of exploration and research from a base camp.* Winter research is to be in the fields of:

a) cartography;
b) hydrography and oceanography;
c) geology;
d) climatology and meteorology (including radiosondes);
e) atmospheric physics.

*Eleven members of the staff of the French Polar Expeditions, headed by André F. Liotard, left Brest on the Expeditions' ship, the *Commandant Charcot*, on Nov. 25, 1948. They sailed to within 40 miles of Adélie Land but were unable to break through the ice pack. They gathered valuable hydrographic and meteorological data, made a landing on Sabrina Island (Balleny Islands) and completed cartographic studies of several previously unstudied islands. Leaving the greater part of their equipment at Hobart, Tasmania, and their sledge dogs in the Melbourne Zoo, they returned to France in the spring of 1949 and immediately began preparations for a second expedition.

Carrying the same group of scientists under Liotard, the *Commandant Charcot* again left Brest for Adélie Land on Sept. 20, 1949. With the aid of air reconnaissance carried out by the pilot of the Expedition, they found a break in the pack and successfully landed on Adélie Land on Jan. 20, 1950, 110 years to the day after Dumont d'Urville first claimed the territory for France. They have built gale-resistant barracks at Port-Martin (66° 50′ S. by 141° 25′ E.) and are pursuing their winter research program.

A detailed account of the Adélie Land Expeditions does not fall within the scope of this pamphlet.



The Antarctic Region

(The above map of the Antarctic Region and the map of the Arctic Region on the preceding page were adapted from Pétrole-Progrès, 1er trimestre, 1950.)

PART II—PRELIMINARY EXPEDITION TO THE GREENLAND ICE CAP, 1948

Leader, Paul E. Victor

4—Aims of the Preliminary Expedition

THE Preliminary Expedition to the Greenland Ice Cap in 1948 was undertaken to prepare the ground for the main expedition, planned for 1949-1950. Its essential aims were:

a) to bring up to the Ice Cap the necessary equipment in order to have it ready on the spot at the very beginning of the main expedition;
b) to bring the members of the Expedition into contact with their operating ground, so as to enable them to improve their instruments and technical methods during the following winter;
c) to start the scientific research program.

The Expedition was to last about 5 months. Upon completion of this period, its members would return to France and carry on the preparation of the main expedition in the light of the facts acquired during the Preliminary Expedition.

5—Landing Operations

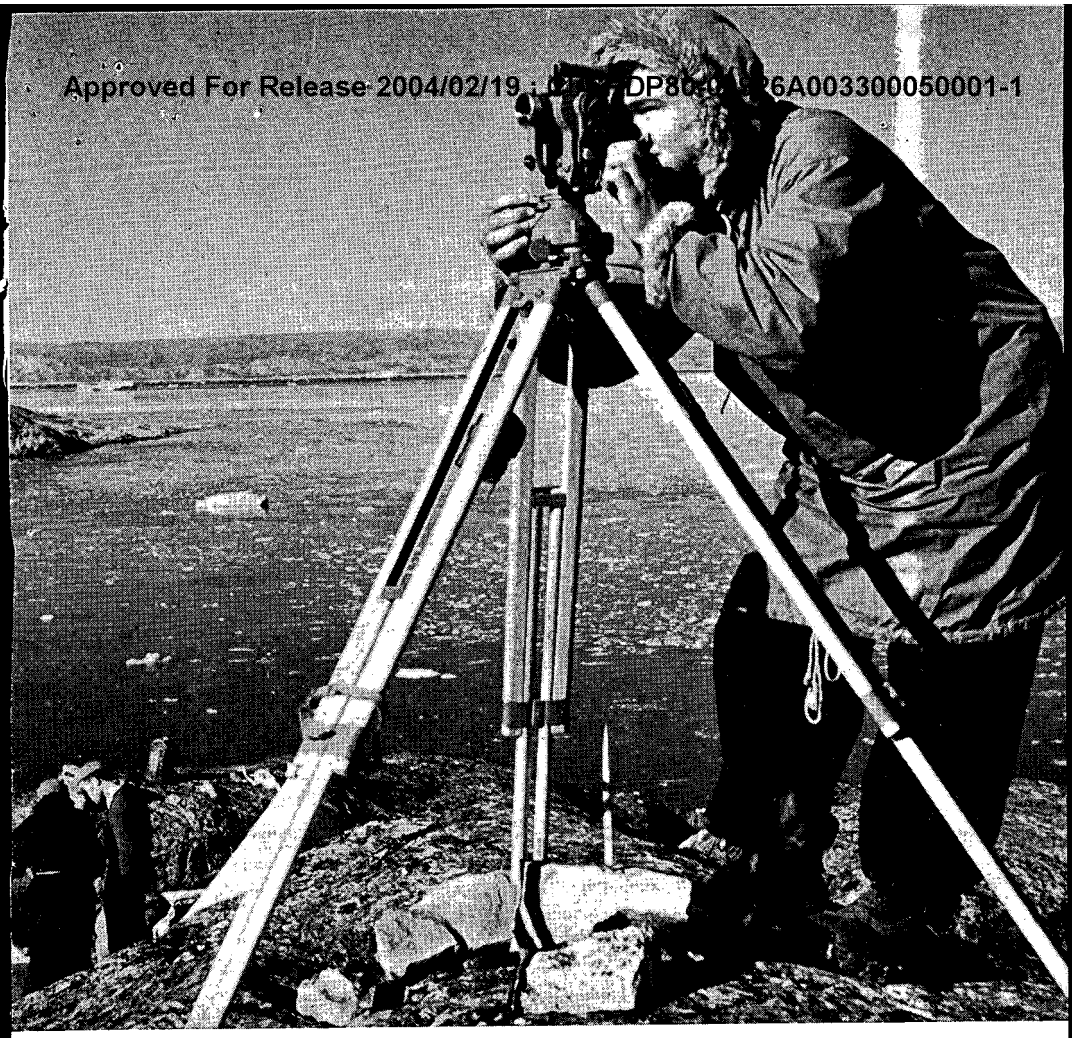
AT OUR request, Eskimos made numerous dog-sled reconnaissances during the winter. Their results, radioed to the Greenland Styrelse, as well as information collected locally, prompted us to visit, first, the point where Quervain landed in 1912. We hoped to find a good anchorage and fairly good landing possibilities there. Moreover, the distance, as the crow flies, from there to the Ice Cap was only 6 miles.

On June 1, 1948 at 10 A.M., the *Force,* carrying the 25 men of the Expedition and 60 tons of equipment, dropped anchor in front of the Eqip Sermia Glacier (69° 46′ N. by 50° 15′ W.) in a fjord practically free from sea-ice, surrounded by land exceptionally bare of snow (600 miles further south, the coast was still covered with snow).

Immediately after we anchored, several parties set out to reconnoiter the possible ways of penetration to the Ice Cap. Access immediately proved to be very difficult owing to the exceptionally small amount of snow which had fallen that year. It was soon evident that the route followed by Quervain in 1912 could not be used by the weasels, and other ways of access had to be found.

After 40 hours of uninterrupted reconnaissance work, we discovered another way which could be improved upon and which seemed to fulfill the conditions required for our ascent. The matériel would be brought to the foot of a 700-foot cliff, which, in turn, would later be climbed by a cableway prepared by us for this purpose.

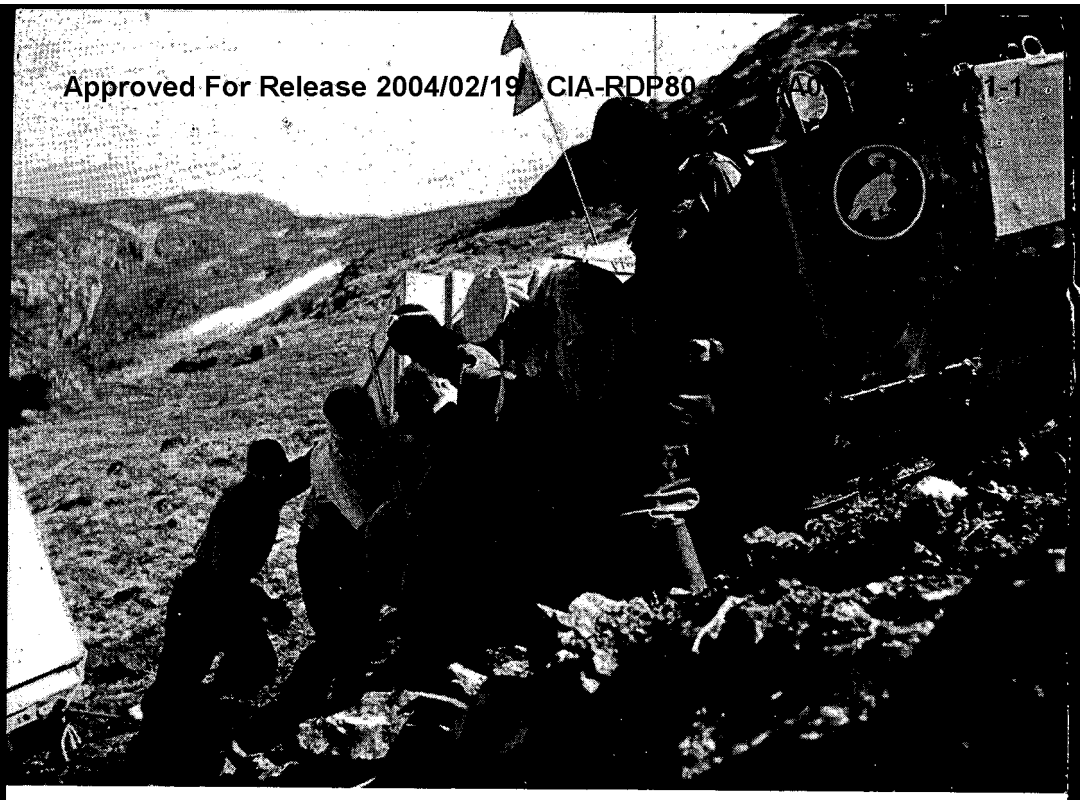
The reconnaissance parties advanced several miles on the Ice Cap. At this time of year (beginning of June), the surface of the firn was rather smooth and still practically unimpaired by the thawing.



Topographer mapping Greenland coast

Actual landing operations started on June 3 at 6 A.M. The many difficulties encountered were due, for the most part, to the nature of the ground (steep coast with slippery rocks), to the waves caused by the discharge of the glacier in the sea, and to the disturbances created by floating ice blocks. In spite of all this, our 60 tons of equipment were unloaded in 5 days (June 3 to 8) without any accident or serious damage.

The equipment included: food for 25 men for 6 months (5,000 calories per man per day); special equipment, light tents for reconnaissance expeditions and heavy tents for base camps; 15 duraluminum sleds to be towed by our 5 weasels, 3 trailers on sleds, to be used as laboratories, measuring approximately 12 x 6 x 5, where our scientists would work in the best possible condi-



Weasel tugging sled up the 6-mile road from Camp I to Camp II

tions; 5,000 gallons of gasoline, 3 winches, 12,000 feet of metal cables of various diameters; and a large number of very diversified scientific instruments, radio-sets, tools, repair-sheds, etc.

We erected a landing-pier and fixed a 250-foot-long winch to raise the equipment from the coast up to the platform, about 150 feet above sea-level, where Camp I was to be set up. This winch could lift one ton of equipment per trip.

The unloading was carried out by all the members of the Expedition, with the help of 15 Eskimos. The only mishap worth noting was the loss of a reserve weasel, which sank while being unloaded (the Expedition had 5 weasels plus 2 additional reserve weasels).

The ship left the Expedition on June 8 at 4 P.M.

6—Setting up of Camp I (Coast Camp), Construction of First Section of Uphill Road to Ice Cap

WHILE most of the personnel of the Expedition were still engaged in carrying the equipment from the shore up to the platform or working to set up Camp I, a reconnaissance group, composed of 2 members of the Expedition and 5 Eskimos, set off with one weasel on June 9 at 9 A.M. to stake out our road up to the Ice Cap.

Lower end of cableway at base of 700-ft. cliff

Camp I was to serve as:

a) a permanent coast camp and residence for the group dealing with coastal questions (geology, geography, permafrost, geomorphology);
b) a camp where the equipment to be carried up to the Ice Cap would be sorted;
c) a storage depot for our reserve equipment for the 1949 Expedition.

A 6-mile road was built between Camp I and the foot of the cliff where Camp II was established. This road encountered various natural obstacles, such as ridges, lakes, steep declivities. Moreover, the ground conditions were very diversified, and we met grassy areas, swamps, rocks, snowbanks, etc. This road enabled us not only to transport the equipment that would be needed on the Ice Cap (amounting to about 45 tons) but to keep our vehicles and the matériel transported in the best possible condition.

In connection with the construction of the road, various operations were conducted at the same time:

a) reconnaissances by small groups of men on foot. Their task was to stake out the best paths, which would later be improved for the vehicles;
b) clearing and marking of the trail selected by a small group of men accompanied by 1 or 2 weasels. The trail was marked by cairns approximately 15 feet apart and situated on the driver's side (left, when

going up). It was necessary to place the cairns at such frequent intervals so that we could follow the road even in fog;

c) improvement of the trail, accomplished by several teams whose mission was to clear out stones, blow up rocks and build the necessary bridges, piers, channels (through the snowbanks), road sections, etc. The first section of the road, 6 miles long and rising 600 feet from Camp I, was completed in 10 days (from June 9 to 19).

7—Setting up of Camp II, Construction of Cableway and Second Section of Uphill Road to Ice Cap

ON JUNE 20 at 9:30 A.M. the first convoy (4 weasels with a 2-ton load) left Camp I. During the following days 15 convoys of 6 vehicles each carried all needed equipment to Camp II. Their schedule was: 6 hours' ride, 8 hours' rest (including loading and maintenance). The transportation of the 3 trailer-laboratories took 40 consecutive hours.

At the same time, the installation of Camp II was started, together with the building of the second section of the road, comprising:

a) a cableway to lift the equipment up to the top of the cliff;

b) a 1-mile trail, running from the higher end of the cableway to the Ice Cap and cutting through the moraines; this trail followed a straight line: it crossed two consecutive moraines, a lake, and a snowbank, and was planned to permit the use of a winch;

c) a trail to the Ice Cap to be climbed by the weasels, lightly loaded. This trail (3 miles long) was not intended to be used by several consecutive convoys. It cut through the most chaotic and dangerous terrain we had met yet.

Bad weather conditions and the presence of countless mosquitoes rendered very difficult the establishment of Camp II, the construction of the cableway and of the different sections of the road.

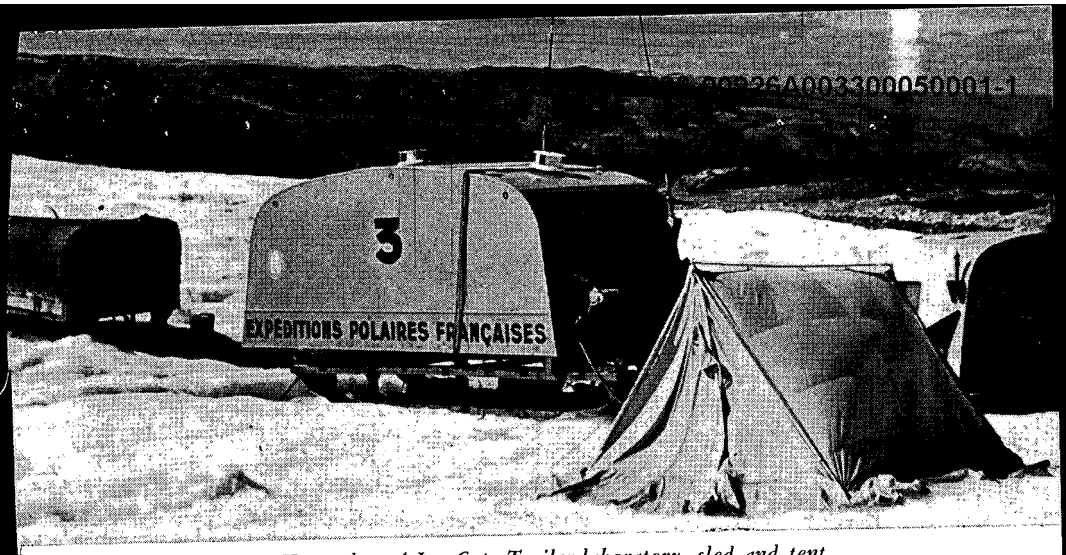
Owing to their structure, the last moraines on the approaches to the Ice Cap presented considerable difficulties. There were loose stones, shifting mud, etc. The aspect of the trail changed constantly and its condition deteriorated daily, requiring endless repairs.

Our cableway had been planned in France. On July 10 it met its first test with excellent results. It rose 700 feet and was 2,500 feet long. The diameter of the metal cable was 14.5 mm., and its tension was 6,000 pounds.

During the next few days, all the equipment was lifted up to the top of the cliff without mishap or accident of any kind. The cableway carried a load of 1,000 to 1,500 pounds at a time. It took 36 consecutive hours of work to bring up the exceptionally heavy loads (about 1,800 pounds) constituted by the trailer-laboratories. A total of 43 tons was carried up.

After repeated attempts, rendered very difficult and slowed down by bad weather, the functioning of the winch that was to bring the equipment from the higher end of the cableway to the Ice Cap proved defective. We then transported it by a series of operations: transportation by weasels from the cableway to the border of the snow, across the lake; crossing of the snow and of the steep side of the moraine by sleds towed by weasels (tied together by a 150-foot cable); transportation by weasels from the moraine to the Ice Cap.

On July 9, the first weasel reached the Ice Cap. On July 13, 34 days after landing, the road, in all 10 miles long, was completed, and Camp III was set up on the ice.



Camp III at edge of Ice Cap. Trailer-laboratory, sled and tent

On July 25, 46 days after landing, the members of the Expedition were at last able to enjoy their first day of rest. During these 46 days, they had worked an average of 14 uninterrupted hours per day. Several sections of our route were accomplished by 36 to 40 hours of continuous work. An average of more than 50 tons of equipment was handled 14 times, by hand, by the members of the Expedition.

By July 25, all the equipment was stored on the Ice Cap without any loss, damage or casualty.

8—Completion of Camp III (Ice Cap Camp), Reconnaissances, Marking of Inland Trail

WHILE the equipment was being hauled from Camp II to Camp III, the setting up of Camp III was completed, and reconnaissance parties set off and penetrated further inland to stake out, through the crevassed area bordering the Ice Cap, the trail we would follow later. These reconnaissance groups went 10 miles inland and explored all the ground lying on either side of the 69° 45′ N. parallel and situated between the two main areas of crevasses (created on the north by the Eqip Sermia Glacier, and on the south by the glacier from which the Eqip Kugssua river takes its source).

On July 29, the first motorized reconnaissance group set off, with 2 weasels towing 3 sleds and carrying a total load of about 3 tons of equipment. This equipment was to be used for a meteorological, geophysical and glaciological research station, which we proposed eventually to set up on the Ice Cap, some distance away from the border.

It was already late in the year and the weather was exceptionally warm. Therefore, the ice surface we encountered immediately after we left Camp III was particularly rough and chaotic, the thaw having already begun to affect the surface of the Ice Cap.

In view of all these difficulties we decided to set up Camp III bis. From this camp, further motorized but lighter reconnaissance groups would set out. Moreover, a certain amount of scientific research could be undertaken there.

The advance reconnaissance party left the next day. It was composed of 2 weasels and a sled, and carried the equipment necessary to set up a light meteorological station, to be manned by the meteorologist and the doctor.

On July 31, this advance reconnaissance group halted on the border of the explored area. It faced a glacial valley, measuring about 10 x 10 miles, and crisscrossed by an intricate network of rivers, lakes and crevasses. Some of these river beds were as large as actual main rivers, measuring up to 160 feet wide, or rushing in the bottom of impassable canyons, 30 to 45 feet deep. Numerous tributaries added to the complexity of this network. The river beds wound their way through countless meanders and disappeared under the ice into abysses, the largest of which had a diameter of about 150 feet. The surface of this "valley" was particularly chaotic, and progress was rendered still more difficult by innumerable cryoconite holes with a diameter ranging from a quarter of a yard to several yards.

After 7 days of work and in view of the difficulties encountered, it was decided not to proceed any further. The roughest section could have been crossed, but the obstacles were such that this crossing would probably have taken several weeks and caused heavy damage to our equipment. It seemed more advisable to spend the time still left to us in Greenland on scientific research work at Camps III and III bis, and to stake out, as far as possible inland, a trail for the 1949 Expedition, running clear of the river beds and crevasses.

By August 9 the reconnaissance party was back at Camp III.

9—Work at Camp III, Storage of Equipment, Return Journey

EXCEPT for the members of the reconnaissance group, the technicians who did not specialize in any scientific research work were placed at the disposal of the scientists as soon as the general tasks of installation were completed.

Theoretically, our ship was supposed to arrive Sept. 10. All necessary steps were taken, so that we could board the ship on that date.

On August 27 storage operations were begun. A suitable emplacement had been located near Camp III. All the equipment was taken apart, thoroughly oiled and protected, and deposited there.

While the storing of the equipment in Camp III was being carried on, we started bringing our matériel back from Camp III to Camp I. The members of the Expedition carried down 5,000 pounds of scientific and personal equipment on their backs.

On Sept. 7 we left Camp III. Both the camp and the cableway had been conditioned for the winter.

From Sept. 8 to 10, we stored the equipment which was to remain in Camp I. By Sept. 10 all our work was completed. As the ship was not expected to arrive for another 12 days, the intervening period was employed for various types of work, material and scientific.

The *Brandal* arrived on Sept. 22. The loading of 4 tons of equipment and the boarding of the men was completed within 4 hours.

Our stops during the return journey, for scientific or technical reasons, were: Ata, Jakobshavn, Godhavn, Sukkertoppen, Godthaab, Prinzkristiansund, Edinburgh.

The *Brandal* arrived at Rouen on Oct. 13, 1948 at 2 P.M.

Part III—GREENLAND ICE CAP EXPEDITION

1949-1950

Leader, Paul E. Victor

10—Transportation, Reconnaissance and Landing

ON THE date scheduled for the departure of the 1949 Greenland Ice Cap Expedition (April 10) reports on ice conditions received from the west coast indicated that the winter of 1948-49 had been unusually cold and long. The fjords north of Holsteinsborg were still locked by winter ice, and the Labrador ice barrier cut off the approach to Disko Bay. However, we decided not to postpone the departure of the Expedition, since the experience of previous years had shown that the breaking up of the drift-ice usually takes place early in May and is a very rapid process. It seemed more logical to wait, if necessary, at the edge of the ice, and thus make sure that our working period was as long as possible.

The *Fjellberg,* carrying the 36 members of the Expedition and 100 tons of equipment, docked at Keflavik, Iceland, on April 22, 1949 and unloaded 70 tons of matériel that were eventually to be parachuted to the future Central Ice Cap Research Station.

Inasmuch as ice conditions had not improved since the Expedition's departure from France, we decided to push as far north as possible and to make a series of reconnaissances in the direction of the Ice Cap. Our aim was to find a means of approach that would enable a small group of technicians to make their way, either in weasels or dog sleds, to Camp III, where the 1948 Preliminary Expedition had stored equipment in preparation for the 1949-50 project. This group would unpack and prepare the stored matériel for use, and thus make it possible for the 1949 program to get under way as soon as the Expedition landed.

On May 6, the Expedition reached Sukkertoppen. Preparations for a reconnaissance into the interior were undertaken immediately, and on May 7, with the aid of the local authorities, a group of 20 men and 1 weasel were landed on the ice at the mouth of the Sondre Isortok Fjord. Study of the map and information received from local caribou hunters led us to believe that the Sondre Isortok offered a possible means of approach to the Ice Cap that would be accessible in weasels.

The reconnaissance party itself (4 men with 1 weasel) set out over the ice of the fjord on May 8 at 4:15 A.M. At 1 P.M., having gone 30 miles, the group was stopped by powdery snow some 6 feet deep. Pushing on further to the east on skis, they found that the same conditions prevailed for miles around. They therefore turned back and regained their point of departure at 7 P.M., having travelled more than 60 miles.

During the day, the warm weather had rotted the last 6 miles of ice, and on May 9 the sea broke it up. The weasel was put in a safe place on a little island. On May 10, the *Fjellberg,* accompanied by a boat from Sukkertoppen, came to take this vehicle aboard.

On May 15 the east wind rose. Hoping that it would clear the coast north of Holsteinsborg by driving the Labrador ice barrier out toward the open

sea, and in order not to lose time, the Expedition set sail May 16 and reached Jakobshavn without mishap on May 17. The ship immediately headed toward Ata Sund, the approach to Port Victor, landing point of the Expedition.

On the way, two teams of dogs were taken aboard at the little settlement of Rodebay.

On May 18 the ship was again stopped by the ice in Ata Sund which made navigation impossible.

The same day, a reconnaissance party consisting of 2 members of the Expedition and 2 native guides with 2 sleds set out over the ice of the Pakitsoq Fjord to reconnoiter a possible means of approach to the Ice Cap.

It turned back the same day when, at the end of the fjord, it found a strip of land completely bare of snow and a glacier with impassable seracs.

By May 19, the ship was back at Jakobshavn. The same day a reconnaissance party composed of 2 members of the Expedition and 3 native guides with 3 dog sleds set off to reconnoiter the interior of the Sikuijuitsoq Fjord. They returned on the morning of May 21, having covered 56 miles. They had found the road usable for dog sleds but not for vehicles with caterpillar treads.

Before sending out a large group which would have had to travel nearly 90 miles over the Ice Cap in order to reach Camp III, a last attempt was made to land near the coast base camp. In the afternoon the *Fjellberg* set sail toward Ata Sund, but found ice conditions unchanged.

That day a strong foehn wind arose, causing the snow to melt rapidly. Nevertheless, we decided to attempt to reach Camp III. In the evening, a group consisting of 6 technicians with 11 dog sleds (carrying about a ton of matériel) set out on the trail that had been reconnoitered previously.

On May 25 this group returned to Jakobshavn, having covered only a little more than 12 miles under exceptionally difficult conditions created by the thaw (cascades, lakes, avalanches, etc.).

The southwest wind having risen during the night of May 26 to 27, the *Fjellberg* set sail on the morning of May 27. It was able to navigate Ata Sund with very little difficulty and cast anchor at Port Victor at about noon, for the previous night's wind had broken up the ice. Fifteen men immediately disembarked to reopen Camps I and III and put the stored matériel in working order. The landing of the entire Expedition and its equipment at Port Victor was completed by the evening of May 31, 1949.

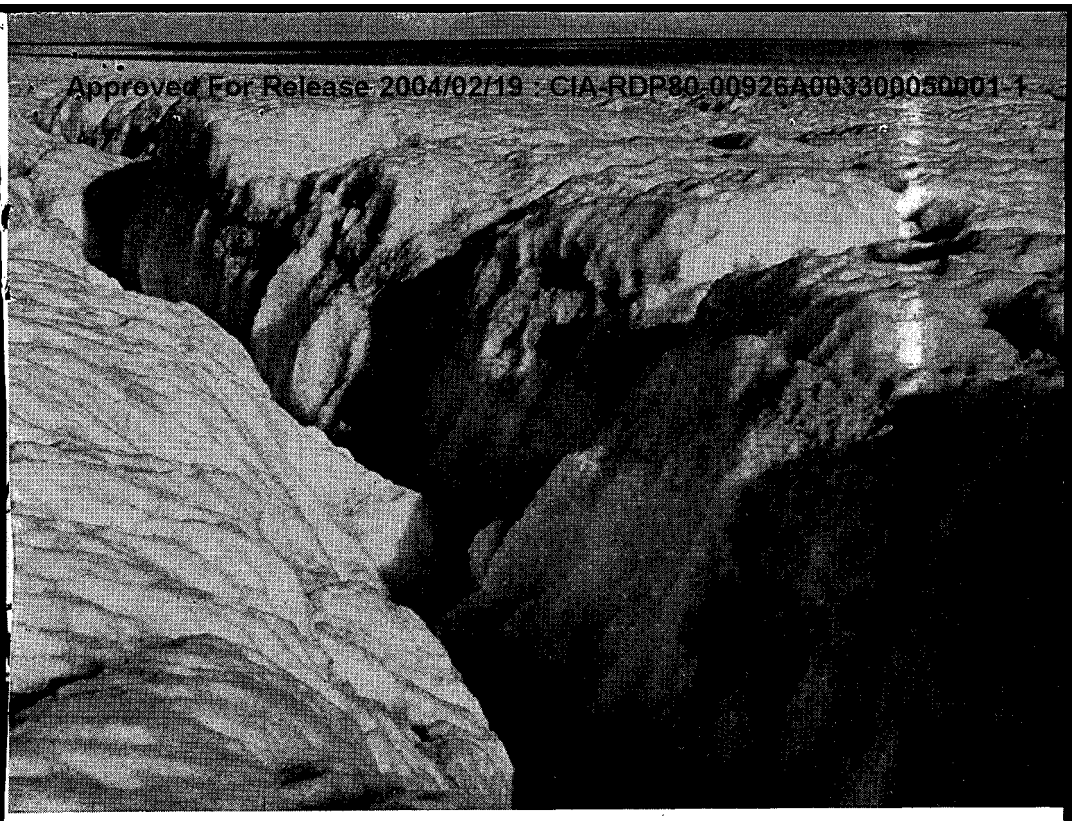
11—Operations Between Camp I and Camp VI

THANKS to the installations set up in 1948, it took only one day, June 1, to lift all the matériel up to the platform of Camp I. The first convoy of equipment (consisting of 4 weasels) left for Camp II and the cableway on June 2.

Certain sections of the Expedition immediately began their scientific research work, especially the coast group.

During this period, the work of clearing and unpacking Camp III (located at the end of the land road, at the edge of the Ice Cap) advanced rapidly. The weasels ran the moment the starter was touched, without any special attention. These weasels had been used throughout the 1948 Expedition and required maintenance work that was undertaken immediately.

On June 7, the thaw struck the marginal zone of the Ice Cap and, in less than 24 hours, the surface which until then had been hard and smooth, as in winter, presented its typical appearance when in process of thaw, marked with



Rough surface at edge of Ice Cap

great humps, ice peaks, crevasses forming from melting snow out of which torrents would soon gush, and slush pits sometimes several yards deep.

In order to avoid the danger of having to wait 3 weeks or a month before being able to bring all the equipment necessary for our wintering up to an altitude of 5,000 feet, beyond the thaw zone, we decided to transport it across the marginal zone immediately.

On June 14, in face of the persistent and increasing thaw, we decided to divide the Expedition into two groups (not counting the coast group):

The Central Group (or Group A), under the direction of Paul E. Victor, whose main task was to set up the Central Ice Cap Research Station in the center of Greenland;

The Western Group (or Group B), under the direction of Jean Nevière, whose task was to continue bringing up the equipment necessary for the scientific research work of this group, to start this work and to advance toward the interior, eventually joining the convoys of the Central Station.

On June 17, Camp IV was set up at 69° 40′ N. by 40° 30′ W., 19 miles (30 km.) east of Camp III, at an altitude of approximately 3,630 feet. This camp was still within the zone of ablation, but it was designed to serve as an intermediate storage depot, where our equipment and matériel could be protected from the thaw. It was set up after 4 convoys from Camp III of which

the last required 28 hours of uninterrupted work. The 40 tons of matériel and equipment necessary to establish the Central Station were brought up to this camp at the cost of great efforts in face of difficulties that grew more severe with every hour that passed.

During this period the convoys between the coast and Camp III continued. The Western Group effected 27 such convoys. In addition to the roughness of the terrain, they met difficulties that arose from the wear and tear of the vehicles. (The work of thoroughly reconditioning and servicing the weasels had been interrupted by the need to start convoys immediately, in order to avoid being caught by the thaw.)

On June 18, 1949, a reconnaissance group consisting of 6 men with 2 weasels set off to the east to find a location for our future Camp V at an altitude of 4,500-5,000 feet. After advancing for 9 hours, 30 minutes, they found a good surface cut in several spots by crevasses that were still covered with dangerous snow bridges. They accomplished the return trip in 3 hours.

During the return journey, the foehn wind began to blow violently, causing rapid melting of the snow at Camp IV. Once more we had not a moment to lose. The same day the first convoy from Camp IV to Camp V set out in the rain.

On June 23, 1949, Camp V was set up at 69° 40.2′ N. by 48° 40′ W., 40 miles (65 km.) east of Camp III, at an altitude of 4,785 feet. Almost all of our 40 tons of equipment was deposited there on that date, following 3 convoys of which the last took 61 hours of continuous work. On this convoy it was necessary to leave part of our gasoline and food supplies in a depot, since the caterpillar treads of the weasels were beginning to show signs of weakening as a result of intensive use. This matériel was later brought up to the Central Ice Cap Research Station by the Western Group's weasels, after it had rejoined the Central Group.

By this time the Western Group had completed 42 convoys between Camp I and Camp III.

To make sure that the thaw would not overtake us again, a convoy of 6 men with 3 weasels set out eastward from Camp V to set up Camp VI, which was to be definitely beyond the thaw zone (at an altitude of about 5,300 feet).

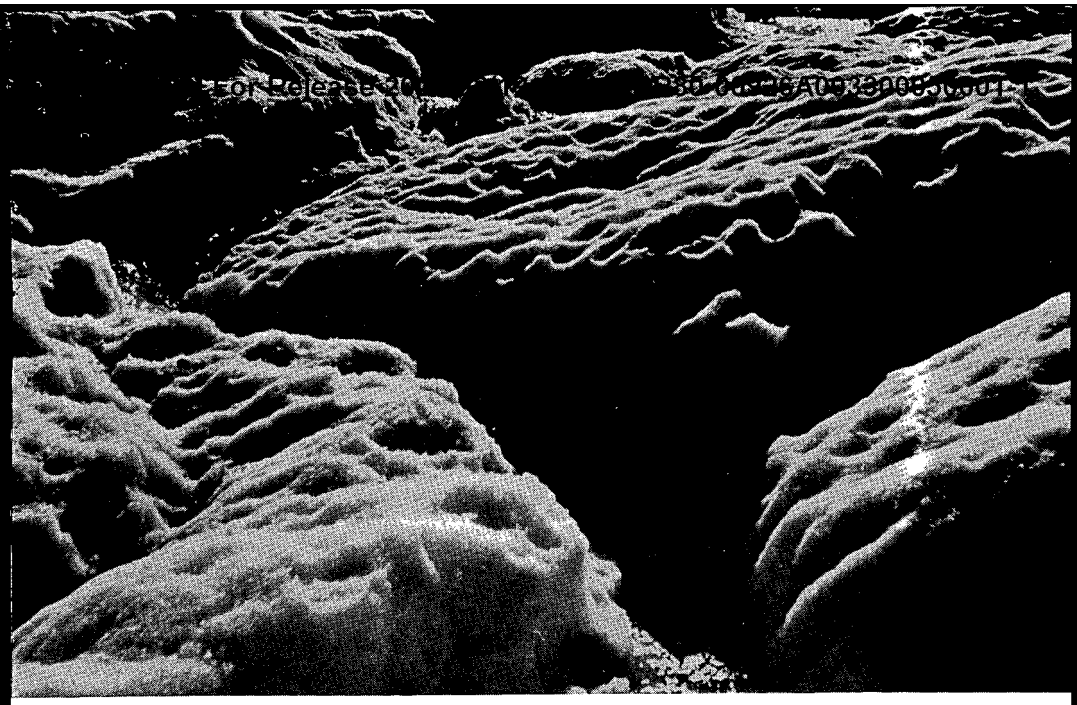
12—Convoy to the Site of the Central Station

ON JUNE 30, Camp VI was set up about 50 miles (80 km.) east of Camp III. Here we stored all equipment not scheduled to go to the site of the Central Ice Cap Research Station with the first convoy.

On July 1, the first convoy set out from Camp V for the site of the Central Station. It consisted of 22 men with their personal equipment, 5 weasels (1 weasel without caterpillar treads had to be left behind) and 7 sleds, carrying 17,600 pounds of matériel, and 2 trailer-laboratories.

On July 3, having covered about 68 miles (110 km.), the convoy stopped at a point 118 miles (190 km.) from Camp III. The weather was bad and the snow very deep. Six caterpillar treads broke on the way and were immediately repaired with cables and frogs brought along for this purpose.

Since the treads which were still intact showed signs of weakening, a depot of matériel was left at this spot, thus lightening our convoy. (The caterpillar treads of the weasels had been subjected to tremendous strain. In 1948, they had withstood 15 convoys over very difficult terrain and numerous reconnaissance expeditions over the chaotic ice at the edge of the Ice Cap; in 1949,



Surface at edge of Ice Cap during thaw

they had carried many convoys through the thaw zone, from Camp III to Camp VI, in melting snow, across an area cut by crevasses, lakes and glacial torrents. The 1949 Expedition had brought spare treads to replace those used the previous year, but the need to push on ahead of the thaw in June, left us no time to put them on the vehicles.)

The convoy set out again on July 5 at 1:45 A.M. It stopped on July 12 at a point 161 miles (260 km.) from Camp III after eight stops to repair the caterpillar treads. Each repair took 14 to 18 hours' work in temperatures as low as –20° F.

Since we had to advance through deep snow and all the treads had had to be repaired, some of them several times, we decided to advance the date of the first parachute drops that were originally to have been made at the Central Ice Cap Station.

A Liberator LB 30 belonging to SATI (Société Aérienne de Transports Internationaux, now known as the Union Aéromaritime de Transport), piloted by R. Loubry and navigated by P. Comet, left Paris on July 12, at 5 P.M. Z. After a short stop at Keflavik, Iceland, it came over the camp set up at the 161-mile (260 km.) point at 10 A.M.Z. and parachuted 6 tons of food and gasoline for the depot, and 12 new caterpillar treads, or, rather, surplus reconditioned treads.

After laying down the depot of food and gasoline and putting the new treads on the weasels, the convoy set out again on July 15 at 3:50 A.M.

On July 17, at midnight, we arrived at the site of the future Central Ice Cap Station (254 miles, or 410 km.) from Camp III, at 70° 54′ N. by 40° 42′ W.

(The position of Wegener's Eismitte station, according to the reports published in 1930, was 70° 53.8′ N. by 40° 42.1′ W.)

In the meantime the Western Group brought the necessary equipment up to the edge of the Ice Cap in 49 convoys (it was necessary to make this large number because the condition of the caterpillar treads required light loads). They arrived at Camp IV on July 16 and recovered the sleds, loaded with gasoline and food, left by the Central Group. Then, they immediately began their research work. They also sent a light reconnaissance party to reconnoiter the trail to Camp V, so that they could eventually join the Central Group.

13—Installation of the Central Ice Cap Research Station

ON JULY 18 the Central Group pitched camp at the site of the future Central Station and continued the research work that had been started during the convoys.

The digging out of emplacements for the Central Station's installations began immediately, according to the plan drawn up before the departure of the Expedition. The entire station was dug out of the firn. A system of snow tunnels about 330 feet long connects the living quarters, the various laboratories, the power house and the storerooms for fuel and matériel.

The house in which the men live was prefabricated in France. It is 16.5 x 26.5 feet. Its walls are 6.5 feet high, while the height to the roof is 8.25 feet. The walls, specially constructed for maximum insulation, are 2 inches thick, but provide the same insulation as 4 feet of brick. The house weighs 4,840 pounds. It was carried overland from the coast to the center of the Ice Cap, since its panels could be neither free-dropped nor parachuted.

The house contains: a dormitory for 8 men, a work-bench, a kitchen unit, a large table, and a kerosene stove.

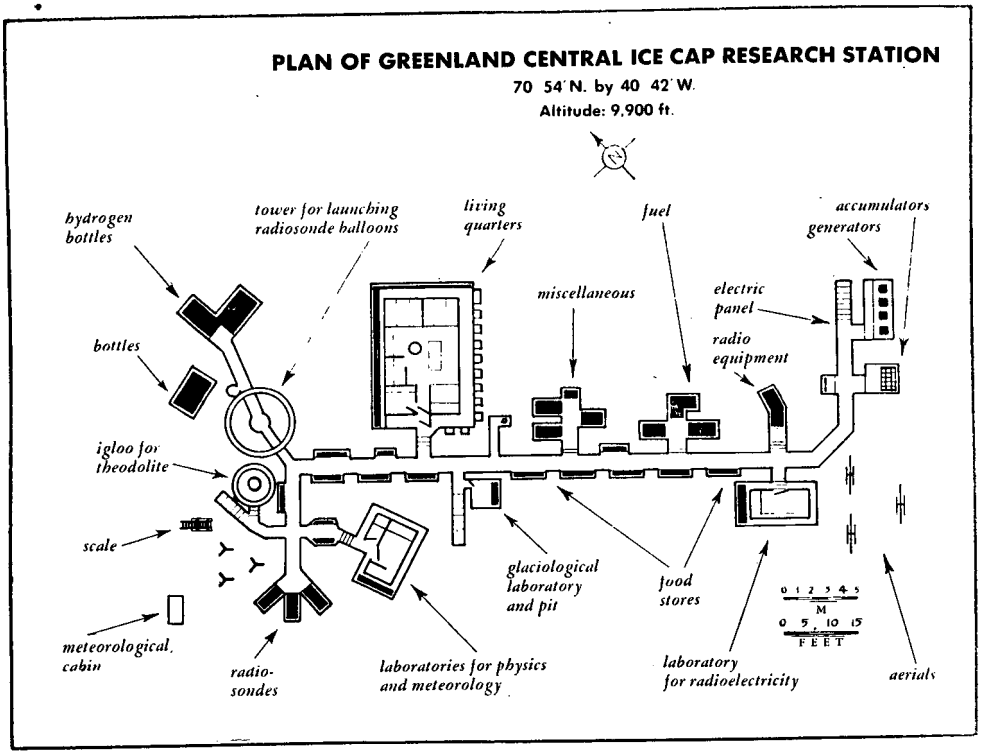
The laboratories are the following: a trailer-laboratory for radiosonde work, at one end of the Station; a trailer-laboratory for radio-electrical work, at the other end; a meteorological laboratory, inside the house; a photographic laboratory, inside the house; an atmospheric physics laboratory, adjoining the radiosonde trailer-laboratory; a laboratory for glaciology and temperature measurements, dug in the firn, and a 24-foot pit for glaciological research.

All these installations are buried in snow, and are thus protected from the wind. This arrangement also reduces the heating problem, since the temperature of the firn rarely goes below −35° F., while outside temperatures sometimes reach −90° F.

The storerooms are as follows: 3 storerooms for bottles of hydrogen used in radiosonde balloons, 2 storerooms for meteorological and radiosonde equipment, 1 storeroom for general matériel and equipment, 1 storeroom for gasoline and kerosene, 1 storeroom for radio-telegraphic equipment.

At one end of the tunnel, there is an electric power station, including 3 generators, a battery chamber and a switchboard.

Outside installations are the following: a launching tower for radiosonde balloons, 13 feet in diameter and 13 feet high; an igloo with an opening in the roof for the theodolite used in radiosondes; a 33-foot tower with various observation instruments at the top; a meteorological cabin; radio antennae; a radio-goniometrical station for the homing of parachute supply planes.



14—Air Operations

THE purpose of these operations was to bring to the future Ice Cap Research Station the 70 tons of matériel deposited by the Expedition at Keflavik, Iceland, in April 1949. They were carried out by the same airplane and crew that had made the first parachute flight on July 13 (see page 17). Thirteen flights were necessary to complete the parachuting of the matériel. These were facilitated by very fine weather. The plane completed 124 flight hours in 12 days. (If weather conditions had made it impossible to land at Keflavik, the plane would have come down at Prestwick, Scotland, 3 hours, 45 minutes of flight from Keflavik.)

The 70 tons of matériel delivered in these air operations included: 15 tons of food and 25 tons of fuel (gasoline and kerosene) for heating, lighting and motor power at the Central Ice Cap Station, which were free-dropped from a height of 23 to 33 feet; 15 tons of spare parts and various other matériel parachuted from a height of 330 to 400 feet. Part of our matériel had been left at Copenhagen because no shipping space was available. (The plane picked it up and delivered to us 6 tons of essential scientific equipment.)

The time required for the flight from Keflavik to the parachute area at the Central Station was 3 hours, 30 minutes; return trip: the same. The parachute

operation itself took one hour. The dropping was carried out at a speed of 161 mph. since the plane could not fly at less than 136 mph. without stalling.

The principal difficulties to be feared in this operation were layers of fog and blizzards on the ground and icing of the plane's propellers and wings. The plane was equipped with a conveyor, designed to facilitate the discharge of the packages, and with extra tanks of alcohol to allow longer resistance to icing.

In order to make certain altimetric and glaciological studies, two detours were made in the course of the return flights, via Scoresby Sound and King Oscar Fjord.

Ground operations involved in the parachute drops were as follows: radio contacts, guiding the plane from its take-off at Keflavik to its landing at the end of its mission; picking up of matériel parachuted or free-dropped (average time: approximately one hour); sorting of matériel (average time: approximately one hour).

Losses involved in the free dropping of fuel and food amounted to less than 2 per cent of fuel and less than 1 per cent of food. The fuel was dropped in jerricans filled to capacity, contrary to the usual technique which is to drop them only two-thirds full.

During this period the Western Group had begun their scientific research program: seismic soundings, temperature measurements at Camp IV, and geodetic surveys. Moreover, their weasels had reached Camp VI. This enabled them to effect a junction with the Central Group.

15—Convoys

ON JULY 30, 3 weasels, with 3 empty sleds attached, set out from the Central Ice Cap Station to collect the matériel that had been left at Camp VI. The distance of 205 miles (330 km.) was covered in 32 hours. The 3 weasels of the Western Group joined this convoy, and on Aug. 4, the 6 weasels, dragging 5 sleds, were back at the Central Ice Cap Station. This convoy transported 9 tons of matériel, including meteorological equipment, radio sets and the house for the Central Ice Cap Station.

On Aug. 7, 6 weasels again left the Central Ice Cap Station, arriving at the 118-mile (190 km.) mark depot 24 hours later. This convoy then divided into two parts, 3 vehicles returning to the Central Station with the 6,930 pounds of matériel that had been left at the depot, the other 3 going down to Camp IV with the parachutes recovered on the ground and the empty jerricans. The latter weasels covered the 235 miles (380 km.) between the Central Station and Camp IV in 46 hours.

Thus, by Aug. 10, all of the 110 tons of matériel, including equipment, food, fuel and scientific instruments, required for the installation and functioning of the Central Ice Cap Research Station, had been brought to the site of the Station. The 40 tons of matériel brought up overland had passed through the hands of the members of the Expedition 48 times.

16—Return of the Main Body of the Expedition

WORK on the installation of the Central Station continued without interruption during the convoys and parachute operations. By Aug. 15, the house was completed and the radiosonde trailer-laboratory and meteorological cabins were set up. Outside temperatures had already fallen to –40° F.

The last convoy carrying matériel and the bulk of the Expedition left the Central Station on Aug. 24 at 4:30 P.M. after 48 hours of work in preparation for departure. It consisted of 9 men and 3 weasels, dragging 3 sleds each of which carried a load of one ton.

The 8 members of the over-winter party remained at the Central Ice Cap Station under the leadership of Robert Guillard. This group still had to complete the installation of the Station, especially the electrical installations.

The return convoy encountered bad weather all along the way: fresh snow, blizzards, heavy fog, etc. The compass guided us over part of the way, since the trail had been partially covered over. However, our cairns and markers remained visible.

On Aug. 29, the convoy arrived at Camp VI. On Aug. 30 at 9 P.M., thanks to the radio, we effected a junction with the Western Group. During the trek to Camp IV, 2 weasels fell into a crevasse and were pulled out by the others.

On Sept. 1, having stored the matériel at Camp IV for the winter, the two groups set out for Camp III. The party consisted of 5 weasels, 6 sleds and 19 men. The broken up terrain was somewhat improved by new-fallen snow, and on Sept. 2 the convoy reached Camp III.

From Sept. 3 to 5, the matériel at Camp III was stored for the winter.

By Sept. 10, the Expedition was regrouped at Camp I with 3 weasels, the others having been stored at the various intermediate camps.

On Sept. 14, the members of the Expedition with their gear embarked on the cod-fishing vessel *Président Houduce* (Compagnie Générale des Grandes Pêches.) After approximately one week of fishing off the Greenland banks, the ship put the members of the Expedition and their gear ashore at Saint-Jean-de-Terre-Neuve on Sept. 29. The heaviest part of their matériel was put aboard the dispatch-boat *L'Aventure.*

On Oct. 2, the members of the Expedition arrived at Gander airport. After an extra parachute operation at the Central Station, on Oct. 4, Roger Loubry's airplane picked up the Expedition at Gander on Oct. 5 and landed them at Orly airport, Paris, on Oct. 6 at noon.

17—The Central Ice Cap Research Station

THE position of the Central Ice Cap Research Station is 70° 54′ N. by 40° 42′ W., at an altitude of 9,900 feet, more than 250 miles from the edge of the Ice Cap.

As of Feb. 1, 1950, the report from the men at the Central Ice Cap Station was as follows:

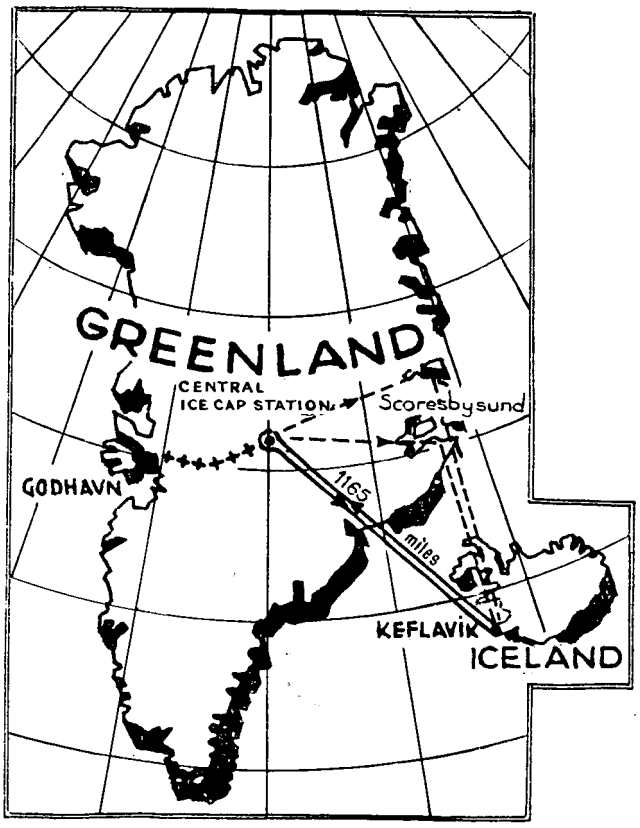
a) *Living Conditions:* Lowest outside temperature recorded: —86° F.; temperature in the corridors and storerooms: between —30° and—40° F.; temperature in the living quarters and laboratories: between 65° and 80° F.

Health and morale of the 8 men: excellent.

Certain difficulties have been caused by the daily accumulation of snow in the launching power and the two entrances. Every day the members of the wintering party clear away the piled up snow.

The motors of the electric power station show signs of weakness and have given some trouble.

b) *Scientific Observations:* Four surface weather observations are taken every day and a radiosonde observation is taken whenever the weather



French Expedition to Greenland 1949

permits (3 to 5 times per week). These observations are sent to the International Weather Network by radio 4 times per day.

Atmospheric physical observations are taken regularly.

The Central Ice Cap Research Station maintains daily radio contact with the headquarters of the Expedition in Paris.

During Christmas week, 1949, and on New Year's Day, 1950, several radio-telephone contacts with the Central Ice Cap Research Station were made. These enabled us to outline future operations at the Station and permitted the men in the over-winter party to exchange New Year's greetings with their families.

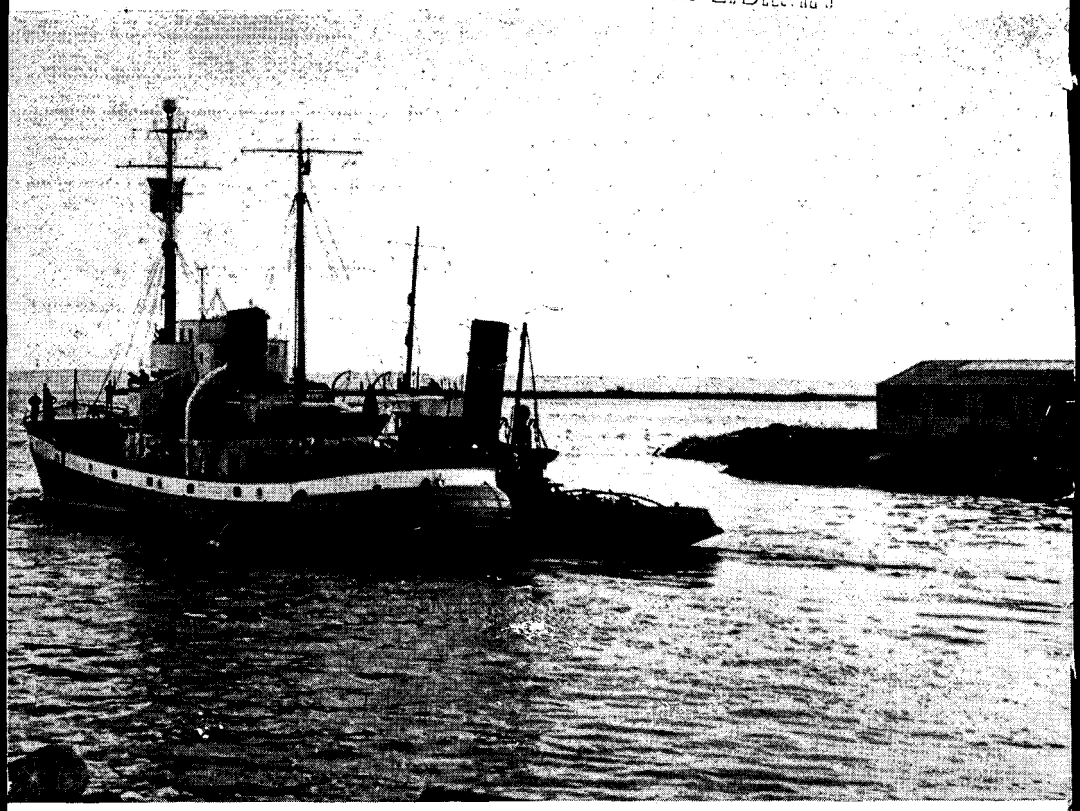
18—Program for 1950-1951

A THIRD summer expedition to the Greenland Ice Cap left Rouen on April 13, 1950 to continue the scientific research program undertaken in the summers of 1948 and 1949 and the winter of 1949-1950. It includes 37 men of whom 8 will eventually relieve the first over-winter party at the Central Ice Cap Research Station. This Expedition reached Port Victor, the debarkation point on Ata Sund, on May 28. Unloading was completed by June 8, and by June 10 a group of scientists had reached Camp VI. The Expedition arrived at the Central Ice Cap Station on July 1, having transported its matériel across the border zone in record time. Groups of scientists began glaciological and other research work at various points between the coast and the Central Station on June 10. Parachute drops of matériel, similar to those carried out in 1949, were effected between June 17 and mid-July.

The 8 men who wintered at the Central Ice Cap Research Station in 1949-1950 will continue their work until September 1950, when they will return to France with the majority of the members of the 1950 Expedition.

The 8 members of the Third Greenland Ice Cap Expedition who will spend the winter of 1950-1951 on the Ice Cap will insure the functioning of the Central Ice Cap Research Station until September 1951.

Removing rocks from the path of weasel on the road to the Ice Cap. At left, Paul E. Victor



The Commandant Charcot, *ship of the French Polar Expeditions, leaving Brest, Sept. 20, 1949 for her second trip to Adélie Land*

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NORTH AMERICA

BERMUDA

The unit of currency is the Bermuda Pound. Present dollar exchange rates are U.S.$2.79 1/2 and U.S.$2.82 to the pound. London exchange is now bought at par and sold at the following rates:

1% premium on the first £500,
3/4 of 1% on the next £2,000, and
1/2 of 1% on the excess over £2,500

Exchange and security transactions are controlled by the Currency & Exchange Control Board which has appointed the two local banks as the only authorized dealers in exchange. All foreign exchange, except sterling, must be sold to the local banks for conversion to local currency. Foreign exchange can only be purchased from the banks on approval of the Currency & Exchange Control Board except in the case of imports as mentioned below.

A citizen of the United States, if not locally employed, may open dollar accounts and may deposit and withdraw freely. For personal requirements he may also operate sterling accounts in which balances duly representing proceeds of United States dollar exchange may be reconverted to dollars. Non-British accounts, except those of United States citizens, are authorized or disapproved by particular rulings of the Currency & Exchange Control Board.

Sterling income on foreign-owned assets may be remitted in foreign exchange only with the approval of the Control Board. Proceeds from the sale of real estate, securities and other capital assets in Bermuda must be reinvested in the Scheduled Territories. Income from subsidiaries and affiliates of American companies may be remitted in dollars, provided the amount does not exceed their dollar earnings surrendered to authorized banks in Bermuda. Foreign-owned companies may not import merchandise for sale in Bermuda.

In order to import merchandise a merchant must have a permit issued by the Bermuda Supplies Commission which in addition allocates exchange. A few items may be imported from the Scheduled Territories only. Subject to prior approval of the commission and when exchange has been authorized, imports are financed under letters of credit, against collection, or occasionally on open account.

Visitors to Bermuda should carry United States dollar letters of credit or travelers checks. United States citizens need not declare their holdings of United States currency on arrival. Local businesses can give change in dollars in connection with dollar expenditures by travelers. The import of United Kingdom currency notes and the export of Bermudian currency is prohibited.

CANADA

On September 30, 1950, the Canadian Government cancelled the official rate of exchange and set the Canadian dollar free on the world market. Despite this development the general structure of exchange control remains unchanged. While Canadian banks and other authorized agents may deal in foreign exchange as principals, they will continue to act as official agents of the Foreign Exchange Control Board for the issuance of permits and other matters relating to exchange control established by the Foreign Exchange Control Act. Primarily, this legislation applies to residents of Canada, including those who established resident status upon entering the country.

A resident receiving foreign exchange is still required to declare it to an authorized dealer, and then either sell it at once to such a dealer at the going rate or deposit it in a special foreign currency account with his dealer; in the latter case he may not make any other use of the foreign currency but is required to sell it within a period of 90 days.

Non-resident travelers entering or leaving Canada are not required to undertake any formalities and may carry with them into Canada any exchange they like, taking the unspent portion out of the country again in the same form. It is permissible to use Canadian dollars which have been purchased in the United States for travel expenses and limited purchases.

It has been announced that the Government has decided that most of the remaining import prohibitions and quota restrictions on consumer goods under Schedules I and II of the Emergency Exchange Conservation Act will be removed effective January 2, 1951. However, the Government has placed a special ban on the importation of certain iron and steel products effective January 1, pursuant to the Export and Import Act.

On December 9 the Government announced that all commodities are subject to the requirement of individual export permits when shipped to China, Hongkong, Korea, Macao and Manchuria.

Canada will now provide appropriate foreign exchange in settlement of Canadian dollars due to non-residents, as well as for services rendered and earnings of various types, such as interest, dividends, profits, etc. As the control applies to residents, certain techniques have been worked out to accomplish these basic principles and it is recommended that non-residents contemplating business in Canada make inquiry to ascertain how they will be affected.

Unincorporated subsidiaries or branches of companies in the United States are presumed to be residents of Canada when they commence business operations in the country, as well as individuals who maintain their homes in Canada and reside in the country for a substantial part of the year or pay income tax as Canadian residents. New capital for such concerns may be transferred to Canada in United States dollars and, in certain circumstances, in Canadian dollars purchased in the United States market. Such plans should be discussed at their inception with

the Foreign Exchange Control Board in order to register with them the new capital investment and to provide for the return of the capital at a later date, if so desired, and for the remittance of earnings and capital appreciation in the event of sale of a property. In the case of earnings, conditions have been established to provide an orderly procedure for payments, confining them to true distributable current earnings, including interim earnings of completed quarterly periods of the current year, after the payment or provision for all expenses, including taxes. These payments are convertible into United States dollars in Canada. In the case of an incorporated Canadian company with non-resident shareholders, dividends may be declared only by permission of the Foreign Exchange Control Board and generally the earnings of not more than one year may be distributed in any one year.

Such firms may accept new financing in the way of Canadian dollars purchased in the United States, but these funds are then not normally available for use to retire accumulated debt to the United States by the remittance of United States dollars from Canada.

Non-resident firms carrying on business in Canada by shipping goods into Canada on consignment in their own name or otherwise may apply to the Foreign Exchange Control Board for permission to operate a special resident Canadian dollar account, called an NS account, with a bank in Canada in connection with such business. This enables the non-resident firm to make collections freely in Canada in Canadian dollars and after paying all Canadian expenses, including Canadian income taxes if applicable, to withdraw its profits in Canadian dollars convertible into United States dollars in Canada.

The Foreign Exchange Control Board is prepared to consider requests from employers to grant non-resident status for limited periods up to one year, after entry into Canada, to employees transferred to Canada for work which, while indefinite, may be of short duration.

Checks issued by residents of Canada in Canadian dollars in favor of non-residents are required to be marked on their face that they have been issued with the permission of the Foreign Exchange Control Board, the majority being marked G/F or DIV. Government checks made out in favor of parties with non-resident addresses are also convertible. Convertibility in Canada may only be done at the prevailing rate of exchange which is subject to daily fluctuations.

Benevolent and personal remittances to Canada by non-residents may be made in Canadian dollars purchased in the United States market, and Canadian residents may now accept payment in Canadian dollars, United States dollars, or convertible currency for services rendered to residents of the United States dollar area. Payments for goods exported, however, must still be made in United States dollars.

Holders of unmatured Canadian securities purchased in Canada before the commencement of control cannot convert such securities into United States or Canadian dollars in Canada. They may, however, freely export them out of Canada for sale in the United States or, if they desire, first switch them in Canada into another security of a similar type. Some securities which have been purchased in Canada

since control started were registered with the Foreign Exchange Control Board and by virtue of this registration may be sold in Canada for Canadian dollars, which may then be converted into United States dollars at the current rate either in Canada or the United States.

SAINT PIERRE ET MIQUELON (See France)

CENTRAL AMERICA AND WEST INDIES

ARUBA (See Curacao and Aruba)

BAHAMA ISLANDS

The unit of currency is the Bahama Pound. Present sight exchange rates are U.S.$2.78 1/2 and U.S.$2.81 1/2 to the pound. Exchange on London is purchased in the Bahamas at a discount of 1/4 of 1% and sold at a premium of 1/2 of 1%. A war stamp tax on all remittances from the Colony at the rate of 6d. on every £10 or fraction thereof applies to all exchange sold.

Foreign exchange regulations are similar to those in the Scheduled Territories. Approval of the Foreign Exchange Control Board is required before foreign exchange may be purchased.

Licenses for imports and exports of merchandise are required under the Defence Import and Export Control Regulations of 1940. Import licenses are valid for six months and must be coupled with Foreign Exchange Control Board approval of exchange before merchandise may be imported. Therefore, foreign exporters to the Bahamas are advised to request that a copy of the import license be forwarded to them with the relative order. Export licenses are similarly required, and hard currency proceeds of exports must be delivered to the authorized agents of the Control Board.

Non-resident Americans may open local currency accounts with the proceeds of United States dollars converted at official rates. If there are dollar deposits only, balances may be freely reconverted to dollars for remittance.

Holders of foreign securities must declare them to the Foreign Exchange Control Board and its permission is required for all foreign security dealings. The income on foreign-owned sterling securities normally may be converted for remittance, but the proceeds of securities and real estate sold may be remitted only with Control Board consent. However, a recent relaxation of the controls favors new hard currency investments. On new dollar investments in the Bahamas both income and capital may be reconverted for remittance abroad.

For travel funds Americans may bring in unlimited amounts in the form of letters of credit, travelers checks, or dollar currency without declaration and may leave with them.

BARBADOS

The British West Indian Dollar (100 British half-pennies) is stabilized at £0.4.2. At the official sterling rate it has a value at present equal to U.S.$0.5833.

Only the three commercial banks operating in Barbados are permitted to deal in foreign exchange and all operations are subject to the approval of the Foreign Exchange Control Authority. Future exchange contracts are permissible for commercial transactions when supported by valid import license.

Import licenses are required for all trade with foreign countries. We understand that the Control Board was issuing licenses for the importation from hard currency areas, such as the United States and Canada, only of foodstuffs and other items essential to the Island. Most imports are on a sight draft basis with only a moderate portion by means of bankers credits and the latter require Control Board approval.

All exports, with the exception of food parcels to the United Kingdom, are subject to approval of the Control Board, and proceeds of those to the United States and Canada may be retained on approval of the Control Board. These funds may be used in payment of imports from the respective countries when supported by import licenses.

Residents in the United States or Canada may open accounts without reference to the Control Board, provided the amounts deposited are proceeds of United States or Canadian dollar transactions. Such accounts can be fed by checks in British West Indian dollars or sterling issued by banks in the United States or Canada. Withdrawals for use within the Scheduled Territories are freely permitted. Visitors operating accounts fed by United States or Canadian dollars may take out the balances remaining in these currencies without reference to the Control Board. Unused balances in accounts fed by British West Indian dollar checks or sterling issued by banks in the United States or Canada may be remitted by sterling drafts negotiable in the United States or Canada.

Proceeds from the sale of foreign-owned assets are subject to control regulations and permission will not be granted for their remittance to the United States or Canada except for the following:

1) Balances of emigrants in sterling form up to £1000 spread over four yearly instalments of £250 each,

2) Royalties, and

3) Legacies up to £500.

Remittances for prewar commercial debts owed to non-residents are dealt with by the Exchange Authorities on their merits.

There is no limit to the amount of United States or Canadian funds that a traveler may bring in whether in documentary form or currency. Importation of British West Indian currency notes and sterling notes from hard currency areas is prohibited. It is difficult to change sterling notes even if brought in from the Scheduled Territories. In order for the traveler to avoid any difficulty in taking out United States or Canadian funds when leaving, it is advisable for him to declare the amount brought in and to obtain a certificate from the Customs Officer at the time.

BRITISH HONDURAS

The unit of currency is the British Honduras Dollar which has a parity value of four British Honduras dollars to one pound sterling and is currently quoted at approximately U.S.$0.70. Foreign exchange control is based on regulations in force in the United Kingdom. Licenses are required for practically all imports from and exports to other than the Scheduled Territories. Provided the import license is still valid and the drawee pays promptly, there are no delays in settling for imports.

COSTA RICA

The unit of currency is the Colon, valued at about U.S.$0.176 (equivalent at the official rate of Colones 5.67 to U.S.$1). Exchange and foreign trade are governed by a law which went into effect on April 1, 1950.

Two legal markets for foreign exchange are in operation: the official market and the free market. Official exchange will be made available only for preferential category imports, students' expenses, government services and profits arising from registered foreign investments. All other exchange requirements must be obtained in the free market which will be supplied by exchange accruing from tourist expenditures, remittances, agents' commissions, diplomatic expenditures, unregistered capital movements and similar transactions. Sales of exchange for any purpose are subject to a sur-charge as prescribed by law.

Imports are no longer subject to license and advance deposit requirements have been abolished. The following five categories of imports have been established, subject to the exchange sur-charges indicated:

Category	Sur-charge
Preferential	10%
First	10%
Second	55%
Third	75%
Fourth	100%

Before imported merchandise can clear Customs, the importer must produce a certificate evidencing payment of the relative sur-charges. Exchange for preferential category imports may be purchased in the official market from registered commercial banks only against authorizations granted by the Control Board and the authorizations must be availed of within five days of their issuance. Applications for exchange for preferred category imports are handled in chronological order, subject to certain sub-classifications of essentiality. Commercial letters of credit and advance payments may be authorized by the Banco Central de Costa Rica, subject to adequate guarantees and solely for the purpose of facilitating the importation of merchandise in the preferred category. Exchange for the first, second, third and fourth category imports must be obtained in the free market.

No exportation of merchandise will be permitted without a license. Foreign exchange derived from exports and from certain other sources must be sold in the official market to a registered banking institution which in turn may sell it only against exchange authorizations granted by the Control Board of the Banco Central de Costa Rica.

Foreign capital investment which is duly registered with the Banco Central de Costa Rica and which sells foreign exchange receipts on the official market is authorized to buy official market exchange for remittance under contract of interest, dividends and amortization, the aggregate not to exceed 10% of the investment annually. Foreign capital investment choosing to sell foreign exchange on the free exchange market, if not designated contrary to the national interest by the Banco Central de Costa Rica, may be duly registered, but will have access only to the free market to purchase exchange for remittance of interest, dividends and amortization.

CUBA

Both the United States Dollar and the Cuban Peso are legal tender at present and at par. The parity between the two currencies is being maintained by the Banco Nacional de Cuba by its official buying and selling rate for dollar exchange of 1/128% on either side of par. Under the terms of the Banco Nacional de Cuba law, the dollar will cease to be legal tender on April 27, 1951, which date, however, may be postponed for one year by the Executive at the request of the Banco Nacional de Cuba. Since the promulgation of this law, all obligations contracted, or to be fulfilled, in Cuba, must be expressed in and liquidated in "Legal Tender" (as defined above) with the exception of the following:

1) Those contracted in connection with the sale of Cuban produce or articles sold to other countries, or individuals or firms located therein.

2) Foreign currency bank balances, other than United States dollars, which will be payable in the currency in which contracted. Banks may, however, pay United States dollar deposits in United States currency or offer the depositor the option of receiving payment by draft on New York (exchange, taxes, etc. for depositor's account) or in Cuban pesos at the day's rate of exchange.

3) Public debt obligations which will continue to be paid in the foreign currency stipulated.

4) Obligations contracted in connection with the importation of merchandise.

5) Commercial credits used to finance and facilitate imports, including letters of credit of all kinds.

6) Loans secured by the pledge of obligations payable in foreign currency which have been issued by the Cuban Government or by a foreign entity.

7) Overdrafts, authorized by banks, in foreign currency accounts.

All exports of funds are under control of the Office of Exchange Control and Movement of Foreign Currency in accordance with Government Decree 2769 of August 20, 1948.

A habitual client (one who has had a current account for six months or more) of a bank can buy or sell exchange through his bank from or to any part of the American continent by merely filing a declaration in duplicate with the bank. All other exchange is subject to prior permit.

Money orders, travelers checks, drafts or letters of credit issued by any banking entity established in the Western Hemisphere, which has agencies or branch offices in Cuba, may be paid without prior approval.

Under the Banco Nacional de Cuba law exporters are obliged to deliver to the Exchange Control 30% of the FAS value of their exports in foreign exchange for which they receive Cuban pesos at par. This percentage may be increased to 100% by executive action upon recommendation of the currency Stabilization Fund Board. At present there are no restrictions concerning the use of the remaining 70% of exchange.

The tax on the exportation of exchange out of Cuba continues to be 2%. This tax also applies on the exportation of:

1) all merchandise, including sugar, and

2) securities.

In both cases, however, the 2% will be refunded to the shipper by the Government if the shipper proves to the satisfaction of the Authorities within 180 days from date of shipment that the proceeds of the shipment have returned to Cuba. In lieu of the actual payment of the 2% tax, shippers usually estimate their requirements for a year and through their bankers furnish the Government with a bond for the total amount involved.

Remittance of the proceeds of collections, credits, clean payments and similar transactions with the following countries are subject to a tax of 2% in addition to the 2% tax mentioned in the previous paragraph:

Bulgaria	Germany	Latvia	Rumania
Esthonia	Hungary	Lithuania	Thailand
Finland	Japan		

This is required by Decree 3343 of December 12, 1941, which concerns transactions with nationals of countries then styled "enemy".

There are no restrictions with respect to local currency current accounts of non-residents and they may be opened and operated without approval or the intervention of the Authorities with the exception of the accounts of nationals of Spain (see below) and those of "enemy" countries.

There are no restrictions on the transfer of foreign-owned assets or the income derived thereon other than those applied to:

1) Spain (see below),

2) "enemy" nationals (see above), and

3) the provisions of Decree 2769 of August 20, 1948 (see above).

While no import licenses are required for the products of Spain, approval by the Exchange Control is necessary to credit the special accounts of the Spanish Exchange Control Board in accordance with Decree 2769. The funds thus acquired are available to pay for Cuban products, such as sugar, tobacco, etc., imported by Spain. Although approval by the Exchange Control does not carry with it any undertaking to provide foreign exchange, the currency Stabilization Fund Board has thus far provided commercial banks with all the exchange required.

The Government exercises no control over import credits, except for those covering Spanish merchandise, and importers may open such credits freely in accordance with customary bank requirements. Imported merchandise may be freely re-exported, provided it has not already been cleared through Customs.

A visitor to Cuba may bring in unlimited funds in the form of letters of credit, travelers checks, drafts and similar types of travel funds, and no declaration is necessary.

Travel funds, other than cash, may be taken out of the country freely. The limit for cash, whether foreign currency or otherwise, is $50 and travelers must sign declarations that they are not carrying more than this amount. Tourists bearing tourist passes are not, however, subjected to this limitation or formality.

CURACAO AND ARUBA

The unit of currency is the Curacao Guilder (C.fl.). The selling rate for United States dollars remains officially fixed at C.fl. 1.905 plus C.fl. 0.005 exchange tax, while the buying rate has been fixed at C.fl. 1.885 for Curacao and C.fl. 1.8840 for Aruba.

Import licenses are not required except for certain high-priced luxury articles when imported from hard currency countries. For products which may be imported without license it is not necessary to obtain approval of the Exchange Control of the mode of payment except when payments to soft currency countries are to be made in hard currency.

When a credit is opened covering the import of a licensed article from a dollar country, or of merchandise from a soft currency country where payment in a hard currency is stipulated, an import license must be shown by the importer to the issuing bank.

An importer can retain the foreign currency proceeds of his exports if they are credited to a foreign currency account with one of the local banks and on condition that the balance of such an account will first be used by the importer for import invoices payable in the same currency. In case of need (non-payment of the relative draft) goods may be freely re-exported, provided they have been stored in the government warehouse. No import duty is then charged, but the storage charges will have to be paid to the Government. If the goods have been in the possession of the buyer, however, the goods having been formally imported and the import duty having been paid, an export license is required to re-export the goods and import duties cannot be refunded.

The sale of dollars for other than current import transactions is subject to a special license, each application being considered on its merits, and transactions involving the transfer of capital continue to be restricted.

Each traveler is allowed to bring C.fl. 25 in Curacao guilder notes into this territory. Hard currencies, including United States dollars, either in checks, letters of credit or bank notes may be carried without limitation. The traveler must declare the currency upon entering and the instruments thus declared may be freely taken out upon departure, provided the status of the traveler has remained that of non-resident.

DOMINICAN REPUBLIC

The monetary unit of the Dominican Republic is the Peso Oro (RD$), equivalent to 0.888671 of a gram of fine gold, which places it on a par with the United States dollar (law promulgated October 9, 1947). The peso oro is divided into 100 equal parts called centavos.

The law of July 28, 1942, set up certain formalities with which an importer must comply to secure exchange for the payment of goods brought into the country, but our banking correspondent assures us that normally, where bona fide transactions are involved, licenses are issued within twenty-four hours of the filing of the application.

The Ministry of National Economy (Secretaria de Estado de Economia Nacional) is in charge of issuing necessary permits for the importation of merchandise. The following items are subject to import licenses, which must be obtained in advance: lard for culinary use, oils (except olive oil), rice, cattle, goats, hogs and lamb on the hoof, the meats which come from them, fowl and meats of the same and empty bags of any type.

GUADELOUPE

The monetary unit is the French Franc (Continental Franc). Dollar exchange is bought and sold at the Paris free market rate, subject to a small commission charge. All dealings in foreign exchange go through the channels of the Exchange Control Board and the operations must be effected by an authorized bank.

Subject to approval by the Exchange Control Board, bank current or savings accounts in francs may be opened for non-resident foreigners. Debits to such accounts do not require the approval of the Exchange Control Board, but all credits must have its prior approval on the assumption that the non-resident foreigner is furnishing foreign exchange for credit after conversion into francs.

Income from or the proceeds from the sale or redemption of securities or other assets held for foreign account may not be transferred without the approval of the Exchange Control Board.

Imports and exports from and to foreign countries must be licensed by the Economic Affairs Committee, even where the operation involves no payment and is made on a gift or barter basis. The granting of such license implies that exchange will be made available.

In exceptional cases an exporter is permitted to retain 15% of the proceeds of his export, but the exchange he retains may be used only to import priority merchandise. The re-export of merchandise must have the authorization of the Economic Affairs Committee.

Travelers no longer need declare funds in their possession when entering or leaving Guadeloupe.

Since Guadeloupe is now an integral part of France, i.e., one of the Overseas Departments, see France, page 67, for further details.

GUATEMALA

The monetary unit is the Quetzal which is divided into 100 centavos and has a value equivalent to U.S.$1. We are informed that with the exception of flour and commercial printed material there are no import or export control regulations in effect at present. No restrictions exist on exchange transactions other than a provision that sales and purchases of foreign exchange be made through qualified banks. Minor exchange transactions of tourists and travelers are excepted from this provision.

HAITI

There are no exchange restrictions in Haiti. The Gourde is by law exchangeable

on demand for United States dollars at the fixed rate of Gourdes 5 to U.S.$1.

With the exception of the importation of arms and ammunition, which is controlled by the Army of Haiti, no regulations or restrictions exist in connection with imports into Haiti.

The same may be said for exports though from time to time, when shortages occur, certain local food crops may temporarily be barred from export. The re-exportation of machinery requires a permit which is sometimes withheld.

United States currency circulates freely throughout the Republic. United States dollar letters of credit, travelers checks and actual United States currency may be carried without limitation.

HONDURAS

The unit of currency is the Lempira which is tied to the United States dollar and has a value of U.S.$0.50.

The Banco Central de Honduras was inaugurated July 1, 1950, at which time the Commission which controlled the purchase and sale of exchange was abolished. There are no exchange restrictions in effect at present.

Incoming foreign exchange must be offered to local banks for account of the Banco Central de Honduras. Exchange may be purchased from local banks without restriction, but for statistical purposes buyers are required to file an application stating how the exchange will be used. A maximum selling rate of Lempiras 202 per U.S.$100 has been fixed by the Banco Central de Honduras effective until further notice.

There are no restrictions on the importation or exportation of merchandise. Providing the drawee acts promptly, proceeds of foreign drafts are remitted by banks without any delay.

JAMAICA

The unit of currency is the Jamaica Pound. Present sight exchange rates are U.S.$2.78 3/4 and U.S.$2.81 1/4 to the pound. Foreign exchange transactions require prior approval of The Jamaica Defence (Finance) Board. Forward exchange contracts can be made only on evidence of firm orders and licenses for import or export duly issued by the Trade Administrator. Exchange will be sold by authorized banks in payment for duly licensed imports.

An import license must be obtained from the Trade Administrator before merchandise can enter and before payment for imports can be remitted. Exceptions to this requirement are:

1) Imports from the United Kingdom/British Colonies group, as authorized by open general license of August 5, 1949, and

2) Bona fide personal gift packages with CIF value of not more than $20.

Import permits for merchandise from hard currency countries are now being issued only for essential foodstuffs, pharmaceuticals and agricultural and industrial machinery when not available in soft currency countries.

An export license must be obtained prior to the shipment of merchandise, and the foreign exchange proceeds must be surrendered immediately to one of the authorized commercial banks. Imports may be fully re-exported in cases where the accompanying draft is dishonored or where license is applied for and refused after the goods have arrived.

Bank accounts of non-residents can be opened in Jamaican currency under three categories:

Domestic, in which are authorized deposits in local currency and withdrawals for payment to local persons or firms.

American, in which are authorized local currency deposits resulting from American remittances in dollars or Jamaican pounds and from which balances can be reconverted for remittance to America, (but should local funds be deposited, such accounts are reclassified as Domestic).

Blocked, on which approval of the Board is required to open, deposit and withdraw, and in which are usually deposited funds refused remittance to hard currency areas.

Visitors from America may carry unlimited funds in letters of credit, travelers checks, drafts or United States currency, all of which must be declared on arrival. On departure the traveler cannot take out more dollar exchange than was declared on entering. The import or export of Jamaican currency notes is forbidden and will be confiscated. Sterling currency notes declared on entrance will be impounded against receipt during the visitor's stay and returned to him at the time of his departure. Sterling notes not declared are subject to confiscation.

MARTINIQUE

The monetary unit is the French Franc (Continental Franc). Dollar exchange is bought and sold at the Paris free market rate, less or plus a small commission. However, exchange is provided at the rate of Frs. 350 for the settlement of imports under the Marshall Plan, except for the import of live cattle for which exchange is provided at Frs. 214.71. All sales of foreign exchange must be authorized by the Exchange Control Board; purchases may be made freely, but must be reported to the Exchange Control Board.

Non-residents may use four types of bank accounts:

1) Accounts in Foreign Currencies - These accounts are practically free, provided withdrawals are converted into francs at the official rates of exchange. Transfers to foreign countries in the currency of the accounts are permitted.

2) Free Franc Accounts - deposits to these accounts may be made from

   a) foreign currency or foreign exchange of the country of the depositor,

   b) another Free Account of the same nationality, or

   c) proceeds of authorized imports, the import license stipulating that payment will be made to a Free Account.

   Accounts in the name of foreigners whose currencies are quoted in the free market are called Free Accounts. Those in the name of foreigners whose currencies are not quoted are called Britannic Account in Francs, Canadian Account in Francs, and so on. These accounts are freely convertible into the currency of the country of the depositor.

3) Suspense Accounts - deposits to these accounts must be authorized by the Exchange Control Board and can be used within the limits of the territory for personal expenses at the maximum rate of Frs. 2.000 daily for one individual and Frs. 100.000 monthly for a family.

4) Capital Accounts - these accounts can be credited with the proceeds of the sale of French bonds regularly imported or deposited in the name of a non-resident or with the proceeds from the sale of real estate. They can be debited with the cost of the purchase of bonds and real estate and of living expenses in France of the depositor and his family up to Frs. 10,000 per day and Frs. 500,000 per month.

Income from or the proceeds from the redemption of securities held in foreign accounts are payable in foreign currency, provided the owner had been registered prior to 1939; if regularly imported or purchased after 1939, the income and proceeds from the sale of securities, real estate or other capital assets are credited to a Capital Account.

All imports are subject to license. The issuance of an import license carries an authorization to purchase the necessary exchange in the free market.

Acceptance of provisional deposits in local currency is not legally mandatory. Merchandise may be freely re-exported without incurring any penalty if the necessary steps are taken in time with Customs (Admission temporaire).

An exporter may retain from 10% to 20% of the proceeds of his exports, but this foreign exchange must be used for imports of goods or machinery needed by the industry producing the item exported from Martinique.

Travelers are allowed to carry any amount of money in the form of specie, drafts, travelers checks and letters of credit. These holdings must be declared on entering the country and must be exchanged through a bank or authorized (recognized) medium. Travelers may take with them any unused balance when they leave.

Since Martinique is now an integral part of France, i.e., one of the Overseas Departments, see France, page 67, for further details.

MEXICO

The unit of currency is the Peso, valued at U.S.$0.1157 which is equivalent to the official selling rate of Pesos 8.65 to U.S.$1, the official buying rate being Pesos 8.64. Established by decree on June 18, 1949, these rates have been maintained to the present time. There are no restrictions on foreign exchange transactions.

Bank accounts can be opened in the names of non-residents and operated freely. There are no restrictions on the purchase and sale of securities by foreign holders, except that the control of local companies is subject to governmental permission. The purchase of real estate by foreigners also requires such approval.

The importation and exportation of certain articles is subject to license. Individuals visiting Mexico on business or pleasure can take in pesos or dollars without limit as to amount.

NICARAGUA

The monetary unit is the Cordoba which is equal in value to U.S.$0.20.

A law effective November 9, 1950, established new regulations governing international exchange operations. The official value of 5 cordobas to the dollar has not been changed, but its use is limited to government transactions which are not to exceed 20% of all exchange receipts. Basic rates quoted below are established for imports and exports. All foreign exchange must be sold to the Banco Nacional de Nicaragua or other authorized banking institutions.

Imports are classified as follows:

First Category - merchandise considered to be essential.

Second Category - merchandise considered to be semi-essential.

Third Category - merchandise considered to be non-essential.

When placing an order abroad for merchandise, importers must obtain a prior permit and deposit with a bank the equivalent of the amount of the order in cordobas. The law provides that import permits will be valid for a period of six months. A copy of the import permit must be furnished to the exporter abroad as this will be required to obtain the consular visa on shipping documents.

The basic rates for import transactions and other payments is Cordobas 7 to U.S.$1, sur-charges of Cordoba 1 and Cordobas 3 being made on second and third category imports respectively. As a result, for first, second and third category imports the rates are Cordobas 7, 8 and 10 per U.S.$1 respectively. Remittances of exchange for other than imports of merchandise are classified under third category and are therefore subject to the exchange sur-charge of that group. The sale of exchange representing a transfer of capital out of the country is prohibited.

Exporters must tender export declarations and commit themselves to return export exchange to the country within 60 days before the Banco Nacional de Nicaragua will issue the requisite export certificates. Exchange resulting from exports is converted at the rate of Cordobas 6.60 to U.S.$1.

PANAMA, REPUBLIC OF

The unit of currency is the Balboa which is equivalent to U.S.$1. There are no exchange, import or export controls or restrictions in the Republic of Panama with the exception of the re-export of merchandise for which a permit is required. United States currency notes circulate freely, and local currency is represented only by the silver balboa and by subsidiary coin. No approval is necessary at present for the opening and operation of bank accounts in the name of non-residents. There are no transfer restrictions on any kind of foreign-owned assets, and travelers when entering may carry currency, letters of credit, travelers checks, etc., without limitation. Such holdings are not subject to declaration upon entering or leaving the country.

EL SALVADOR

The monetary unit is the Colon, valued at U.S.$0.40. There are neither exchange control restrictions nor export and import control regulations in effect at present.

TRINIDAD AND TOBAGO

The unit of currency is the British West Indian Dollar (100 British half-pennies) which is stabilized at £0.4.2. At the official sterling rate it has a value at present equal to:

Buying	Selling
U.S.$0.58616 (sight and cable)	U.S.$0.58004
U.S.$0.59171 (currency notes)	U.S.$0.58479
U.S.$0.59382 (coupons)	

Transactions between residents of the Colony and those outside the Scheduled Territories, which involve remittances of funds to the latter, are subject to government control. Regulations in force in the Colony, which are subject to change from time to time, are basically those applying in the United Kingdom.

Apart from gift parcels of small value, for which no currency is remitted in payment, and some goods produced or manufactured in the United Kingdom or British Colonies, no goods may be imported from any source unless the importer has first obtained an import license. Goods arriving in the Colony which are not covered by a valid import license are liable to confiscation.

If exporters wish to satisfy themselves regarding the issue or extension of import licenses, they should ask importers to supply them with the copy of the license, or memorandum of extension, specially provided for the purpose. Import licenses are granted in accordance with the policy of the Control.

Foreign exchange to pay for imports can, with the approval of the local Control, be arranged by letters of credit. In establishing letters of credit, however, the local banks usually require on board bills of lading. Importers may arrange to cover foreign exchange forward to the extent of and within the validity of import licenses held.

Upon arrival imported goods are discharged to a government warehouse where, if not cleared before, they may remain for approximately ten days. Theoretically, they are then transferred to the government bond for want of entry where they are allowed to stay for two years. Due to congestion these transfers have not always been effected promptly. At the expiration of the two years the goods are sold by the Government to cover warehouse expenses. Goods of a perishable nature may remain in bond for two months only. Warehouse rent begins to accrue four or five days after arrival of goods.

Unless the Control exercises its power of confiscation in the event of goods arriving without license, goods may be reshipped without difficulty in case of rejection by consignees.

Banks in Trinidad cannot accept bills of lading to their order or split bills of lading covering imports into the Colony. A separate bill of lading made out to the order of the shipper or the importer is required to cover each purchaser's

goods. Shipments to various purchasers should only be grouped on one bill of lading if consigned to the order of the shipper's local agent who will arrange delivery to the individual buyers. Where such bills of lading accompany bills for collection, the collecting bank should be given definite instructions to release the bills of lading to the agent free against his undertaking to produce separate delivery orders instead.

Sight and unaccepted bills may be protested within a reasonable time. This period is not clearly defined by law. An unpaid acceptance must be protested before the close of business on the day succeeding the one on which it matured.

All goods exported, except gift parcels of small value, require an export license. In the case of goods exported to countries other than the Scheduled Territories, the resulting foreign exchange must be brought into the Colony and delivered to one of the local banks, which certifies on the export license that this has been done. The latter is then returned to the Control Board which keeps a regular check on outstanding licenses.

With approval of the Exchange Control, exporters may retain foreign currency proceeds of exports to the extent of valid import licenses in the same currency. Such foreign currency must be held for the exporter by an authorized bank which must be furnished with a Form E, approved by the Exchange Control, when the funds are required for payment of imports.

At present the provision of foreign exchange for travel to countries other than the Scheduled Territories is strictly controlled. Each application is treated on its merits by the Control Authorities, but generally speaking approval will only be given in cases of travel for essential medical reasons or necessary business trips of short duration. Non-residents from other than Scheduled Territories may bring with them any amount of United States currency or Canadian currency which must be declared in regard to the amount of cash only upon arrival and departure; when leaving, the traveler is free to depart with an amount of currency equal to that which was declared on entry. Such non-residents should not bring Bank of England notes or currency notes of other Scheduled Territories as they will not be able to exchange them or use them in payment of services.

Applications for exchange to remit to countries other than the Scheduled Territories for maintenance or other personal reasons are treated on their merits by the Control Authorities, no definite policy being ascertainable.

Residents are not permitted to make investments in the securities of countries outside the Scheduled Territories unless they are able to acquire such securities from other residents of the Scheduled Territories. Persons residing outside the Scheduled Territories will usually be permitted to invest in local securities or real estate, and the income from such investments may be remitted to the investor. It is believed, however, that withdrawal of the investment will now be permitted under the Aid to Pioneer Industries Ordinance, provided that, at the time the funds are brought into the Colony, permission is obtained from the Financial Authorities.

Local banks are permitted to open accounts for non-residents, provided such accounts are fed in a certain way. For example, a resident of the United States may open an account, which would be designated an American Account, provided it is fed with United States dollars or sterling from another American Account. Funds in such an account would be available for payments either locally or to residents of any country in the American group.

SOUTH AMERICA

ARGENTINA

The unit of currency is the Argentine Paper Peso (m$n).

The foreign currency equivalent of the invoice value of all exports, except up to 6% of the FOB value which may be paid to agents abroad, must be sold, either on a spot or forward basis, to an institution authorized to deal in foreign exchange; the consular value of imports may in general be purchased, spot or forward, from authorized institutions. All foreign exchange transactions are subject to the regulations of the Central Bank of the Argentine Republic.

On August 28, 1950, the Central Bank announced a reduction in the number of exchange rates to three, as follows:

1) Official Market - basic buying and preferential selling, m$n 500 per U.S.$100 or 20¢ per paper peso.

   a) The basic buying rate is applicable to the FOB value of the bulk of exports, including such products as chilled and frozen beef, mutton, raw hides, wool, wheat, corn and linseed.

   b) The preferential selling rate applies only to imports of essential fuels - coal, coke, petroleum, fuel-oil and certain of their by-products.

2) Official Market - preferential buying and basic selling, m$n 750 per U.S.$100 or 13 1/3¢ per paper peso.

   a) The preferential buying rate applies to a wide variety of exports, such as casein, cheese, tanned hides and quebracho, which may need the advantage of the preferential rate to compete in world markets.

   b) The basic selling rate applies to imports which are considered essential to the economy of the country.

3) Free Market - currently quoted at about m$n 1,380 per U.S.$100 or approximately 7 1/4¢ per paper peso.

   a) In the case of exports, this rate is applicable to those products, such as fresh and

dried fruit and various metals and manufactured goods, the export of which is being encouraged.

b) The free rate will also be made applicable to certain non-essential imports, but no list of such products has as yet been published.

Export permits are generally required before merchandise may be shipped abroad. The Argentine Trade Promotion Institute (IAPI), a government entity, has been granted a monopoly on the exportation of most of the basic export products of the country, including meat and some by-products, practically all grains, quebracho extract, vegetable oils and cakes and most hides and skins. Wool is a notable exception.

In order to facilitate the exportation of Argentine products on the one hand, and to assure herself of adequate supplies on the other, Argentina has entered into bi-lateral agreements with 28 different countries. Trade agreements are at present in force with Austria, Belgium and Luxembourg, Bolivia, Brazil, Bulgaria, Chile, Czechoslovakia, Denmark, Finland, France, Holland, Hungary, Israel, Italy, Norway, Poland, Japan, Paraguay, Peru, Portugal, Rumania, Spain, Sweden, Switzerland, United Kingdom, Uruguay, Western Germany and Yugoslavia. In some cases these include payment arrangements in artificial currencies and in other cases in the currency of one of the countries involved. Several of them provide for reciprocal credit limits. Any transaction with one of the above-mentioned countries in a currency other than that specified in the corresponding agreement requires special authorization from the Central Bank.

Permits from the Central Bank are required for all imports. From time to time, in accordance with the requirements of the country and exchange availabilities, lists are published of goods for which applications for permits may be filed. In the case of certain goods, such as coal and coke, refractory materials, some electrical materials, wire, abrasives, worked and unworked iron, tinplate, medicinal products and some metals and chemicals, permits are automatically granted if imported from specified countries when requested by registered importers, provided they have been importers of such goods for any 3 years since 1937 or by industrial users if registered as importers when the goods are to be used in their plants. All other applications are subject to prior study on the part of the Central Bank. Such permits as may be accorded must be accepted or rejected by the importer within 45 days. Once a permit has been definitely issued, a fine of 20% must be paid if at least 90% of the permit is not utilized. Shipments in excess of permit amount or quantity are not tolerated. Permits are valid for a period of 9 months commencing with the first working day of the calendar month following date of issuance. Customs clearance of merchandise must be initiated prior to expiry of import permits. Permits granted at one of the official rates automatically assure the importer of the rate of exchange ruling on the day on which the permits are granted. Interest at the rate of 2 1/2% per annum is charged for this rate insurance from the date the import permit is granted until time of liquidation or maturity of the respective clearance certificates. All permits must carry a bank undertaking

attachment upon court order. In accordance with Central Bank regulations, all payments on account are subject to the same treatment as accorded other deposits received by local banks and must, therefore, be transferred to the Central Bank, which institution is solely responsible for them under the guarantee of the Argentine nation.

It is general market practice for local importers to delay taking delivery of documents until after the carrier has reached the Argentine port of discharge. Accordingly, instructions regarding protest of drafts for non-payment of the peso equivalent or for non-acceptance should authorize the collecting bank to defer taking such action until after the arrival of the merchandise. Also, it frequently occurs that acceptors of time bills have not been able to effect liquidation at maturity owing to unforeseen delays in obtaining their clearance certificates enabling them to apply for official exchange. Under the circumstances it is customary market practice to accept provisional deposits in pesos at maturity together with drawees' undertaking to remain responsible for any eventual difference in exchange, and drafts are not protested if drawees have complied with these requisites, but it is always preferable for remitters to authorize the collecting bank to follow this procedure.

In accordance with regulations of the Customs, importers are allowed a period of 15 days, beginning with the date the carrier is given official entry to a port, to initiate clearance of the merchandise or to declare the goods in their name; failure to do so results in the application of a 2% fine on the value of the goods. As banks are not registered importers, they cannot initiate clearance of the goods, but they can make the declaration in their name to avoid the fine of 2%. Therefore, it is advisable that remitters specifically instruct collecting banks to make such declaration for the remitter's account and responsibility, as all banks upon declaring merchandise in the Customs in their name must sign an undertaking whereby they become responsible for the immediate reshipment of the goods in the event no covering import permit is available, and they also become liable for all accrued warehouse charges and other expenses incurred in connection with the merchandise. Please note that our branches do not make such declaration unless specifically authorized to do so by the remitter who undertakes to remain responsible for any and all expenses and risks. A subsequent declaration as to contents of the shipment for classification must be made within 23 days after entry of the carrier, otherwise a fine is levied of 5% on the duties payable. Banks cannot make this declaration as they do not know the contents of the shipment and heavy fines may be imposed by the Customs for erroneous information. Clearance of shipments must be initiated within 60 days after the date the carrier is given official entry to a port, and all accrued storage expenses and other charges must be paid within this period or the merchandise may be sold at public auction. The proceeds of such sales are applied against accrued charges, including duties payable, and any shortage is for account of the registered owner. Collecting banks are not informed when the auction is about to take place nor of the results obtained therefrom. Consequently, banks cannot be held responsible for not claiming reimbursement of any surplus proceeds that may remain after auction of the goods.

Up until November 15, 1950, all customs duties on merchandise entering Argentina

whereby the bank becomes responsible for the compliance by the importer with his obligations in connection with exchange rate insurance.

Import permits assure importers that the merchandise covered thereby will be allowed to enter the country and indicate the type of exchange which will eventually be sold to the importer, i.e., official - basic or preferential rate, or free market exchange. Merchandise which arrives in the country without an import permit must be re-exported. Exporters to Argentina should, therefore, satisfy themselves that the buyer holds a valid import permit and that the origin, quantity and quality of goods shipped are in agreement therewith. They should also satisfy themselves as to the conditions under which such permits are issued, as the Central Bank grants some permits with restrictive clauses; for instance, some permits carry the provision that payment is to be spread over a period of years commencing one year after clearance of the merchandise, whereas other permits may be issued with the stipulation that no foreign exchange will be granted at any time.

Upon clearance of merchandise through the Customs, importers are given clearance certificates, against which any authorized bank, acting on behalf of the Central Bank, can sell them the corresponding exchange for subsequent transfer abroad.

Remitters of documentary drafts should refrain from instructing collecting banks to deliver documents against payment, as under existing regulations it is not feasible for drawees to pay in the currency of the draft upon presentation since official exchange in cover of merchandise imports is made available only after the Customs clearance certificate has been obtained by the importer. Accordingly, instructions relative to delivery of documents should be furnished along one of the following lines:

1) Against simple receipt with no reservations.

2) Against receipt specifying that the purpose is for clearance of the merchandise and stipulating that payment of the peso equivalent and application for exchange is to be made within a period of ..... days.

3) Against payment on account of the peso equivalent of the accompanying draft at the exchange rate corresponding to the category of merchandise importation together with drawee's written agreement that the clearance certificate is to be cancelled and application for exchange is to be made within a period of ..... days, as well as to remain responsible for any difference in exchange.

4) Against acceptance.

According to some legal opinions, deposits as payments on account made in lieu of and pending the acquisition of official exchange cannot be withdrawn by drawees; it appears, however, that deposits of this nature are subject to

cannot assume any responsibility for the eventual remittance of any claim under these circumstances nor for any difference in exchange resulting therefrom.

With a few exceptions, a permit must be obtained before banks can sell free market exchange not related to merchandise imports. The only exceptions at this time are those reported below, but before banks can transfer the funds abroad, details of the transactions must be reported to the Central Bank for their perusal and approval:

1) Cable and postage expenses, banking charges and commissions and interest owed by authorized institutions to their correspondents abroad.

2) Payment of fees and expenses for renewal of trade marks and patents.

3) Remittances from Embassies, Legations and Consulates accredited to the Argentine Government covering consular revenue.

4) Transfers up to m$n 50 per remitter per month for subscriptions to and the purchase of magazines and books of a technical or scientific nature.

5) Pensions up to m$n 250 per month per beneficiary.

6) Remittances for family aid to Spain and Italy for various amounts depending upon the relationship of beneficiary to remitter, length of remitter's residence in Argentina and remitter's income, but in no case exceeding m$n 600 per month per beneficiary (to be reduced to m$n 400 per month per beneficiary in March, 1951).

Foreign capital is free to enter Argentina without restriction. Central Bank Circular No. 1312 of August 28, 1950, authorizes the remittance of not more than 5% of net profits, income, interest or other returns on such investments, which correspond to fiscal years closed after August 28, 1950, with transfer to be made in four equal quarterly installments. Such transfers must first be approved by the Central Bank. The method for establishing the amount of investment has not as yet been announced and we have heard of no remittances being effected under the provisions of this circular.

There are no limitations at present as to the amount or form of travel funds in foreign currencies which travelers may bring into the country, but the importation of Argentine currency requires the prior authorization of the Central Bank. It is not necessary for travelers to declare currency holdings on arrival or departure. Recent regulations allow departing visitors to carry with them a "reasonable amount" of merchandise of Argentine origin.

Argentine peso accounts in the name of persons or firms domiciled abroad may be

were calculated on a fixed tariff valuation basis, for the most part well below actual value of the goods. On that date, however, new regulations went into effect, whereby duties are levied in general on the CIF value of the merchandise, at rates ranging from 3% to 60%.

It is important that exporters to Argentina bear in mind that merchandise which arrives without a valid permit cannot be cleared and must be reshipped. Also, in order to avoid delays and possible fines, all shipments under present regulations should be accompanied by bills of lading, consular invoices in duplicate and two commercial invoices legalized by an Argentine consulate, one of which should be marked "para estadistica"; in this connection it is well to note that banks can no longer issue guarantees in lieu of missing shipping documents. Finally, exporters should exercise special care that shipments agree 100% with the description of the merchandise on, and the amount of, the import permit, as otherwise difficulties in clearance may be encountered and importers may be unable to obtain clearance certificates entitling them to apply for exchange.

Under existing regulations insurance on imports and exports, when the merchandise travels at the risk of the Argentine importer and exporter, may be placed only with insurance companies admitted to do business in Argentina. Infractions are subject to a fine equivalent to 25 times the premium paid to admitted underwriters. It is generally considered that the risks of transport of all goods entering the country are for account of the receivers with the following exceptions:

1) When the goods have been purchased FOB for a place in the interior of Argentina.

2) When merchandise is sent to Argentina on consignment.

3) When merchandise is brought to Argentina for sale through representatives or agents of the foreign firm, provided that importation is for the foreign firm's account and the importation is being carried out by the firm itself.

Merchandise covered by a marine insurance policy issued by a company admitted to do business in Argentina is at present automatically protected against the risks of fire for a period of 15 days, from midnight on the day on which unloading from the carrier is completed. Consequently, when the documents attached to a collection item have not been withdrawn by the drawee by the end of this period, the insurance protection against risk of fire automatically ceases. Should remitters desire protection beyond the initial 15 day period, in the event that a collection is unattended, specific instructions to that effect should be furnished with each bill. It is well to note that only the risk of fire can be covered. Policies may be issued in either Argentine pesos or in foreign currency. In the case of total or partial loss, the regulations provide that the Customs issue a special clearance certificate to the importer upon presentation of the shipping documents, import permit and insurance policy; this clearance certificate will entitle him to apply to the Central Bank through an authorized bank for remittance abroad of the foreign funds. However, collecting banks

opened only with the prior approval of the Central Bank. As in the case of deposits received for local firms, all funds received for the credit of the depositor's account must, in accordance with local legislation, be transferred to the Central Bank, which institution is solely responsible for them under the guarantee of the Argentine nation. Also, any movement of funds over such foreign domiciled accounts, even for payment of expenses within the country, must have the prior authorization of the Central Bank regardless of the amount involved. Banks abroad, however, may open Transferable accounts, which are fed with the sale of freely convertible foreign exchange or the transfer of funds from another Transferable account. Debits to these accounts, without prior Central Bank approval, are permitted for strictly local payments, the transfer of funds to another account of the same nature in the name of the same or of another bank domiciled in the same country, or transfers in the corresponding currency to the country of the bank in whose name the account is registered.

BOLIVIA

The unit of currency is the Boliviano.

Control of imports, exports and foreign exchange transactions is centered in the Banco Central de Bolivia. Prior permits for both imports and exports are required, and with certain exceptions all exchange resulting from exports must be delivered to the Banco Central de Bolivia.

There are two rates in effect - the official rate which is Bs. 60 buying and Bs. 60.60 selling per U.S.$1 and the free rate of Bs. 100 buying and 101 selling per U.S.$1.

The official rate of Bs. 60 shall apply for the following purposes:

a) Requirements of the Federal and Municipal Governments or their agencies, public services, including transportation, light and power companies, universities and the payment of students' scholarships.

b) Importation of those food products, raw materials and manufactured articles included in a preferential list prepared by the Minister of Finance.

c) Payment of customs, import and export duties.

The free rate of Bs. 100 shall apply to the following transactions:

a) Importation of articles which do not appear in the preferential list nor in the list of articles the importation of which is prohibited.

b) Other purchases of foreign exchange by private companies and individuals.

c) Exporters of certain products, the production of which it is desired to stimulate, are permitted to sell stipulated percentages of the value of their exports at this free rate.

Prior import permits are valid for 180 days. Bolivian consuls abroad require the original of the import permit in order to visa documents. The permit entitles the importer to official exchange at the rates mentioned and at the bank designated in the permit.

The sale of exchange for purposes other than those indicated requires special authorization and, if approved, would presumably be at the free rate. Operations in future exchange are not allowed. Current accounts in local currency may be opened in the name of a foreign domiciled concern or individual, subject, however, to the approval of the Exchange Authorities. We are informed that very few irrevocable credits are being opened by the commercial banks and that most imports are on a sight collection basis, documents against payment. Until quite recently a considerable volume of merchandise was being imported under barter arrangements. Also, some import permits were being issued providing for payment by the importer with his own exchange.

Travelers checks appear to be the medium preferred by travelers for carrying funds into Bolivia.

BRAZIL

The currency unit is the Cruzeiro and the official rates for United States dollars fixed by the Banco do Brasil S.A., to which all banks dealing in exchange must adhere, are as follows:

		BUYING	SELLING
U. S. dollars	cable	Cr$18,38	Cr$18,72
"	sight	Cr$18,38	Cr$18,72

These rates are net after stamp taxes and brokerage of approximately Cr$0,12.

EXCHANGE CONTROL

Exchange control with variations has been in force for the past sixteen years, but the following is a general resume of the present system.

Before any product may be exported from Brazil for sale abroad the relative foreign exchange must be sold to an authorized bank. All purchases and sales of exchange regardless of origin, destination or nature, and whether in hard or soft currencies, must have approval of the Exchange Control and must be executed through banks authorized to deal in exchange. Export and import transactions in cruzeiros are permitted in certain cases but subject also to approval of the Exchange Control.

the expenses of the return trip.

c) Remittances destined for the maintenance of persons living abroad, who are either relatives of the interested party or economically dependent upon him, within the limits established by the Exchange Control and after proof of payment of the income tax has been established by the remitter.

Fourth Category: Importation of merchandise classified in import license Category Non-preferential (see comments under heading PREVIOUS LICENSES).

FIFTH CATEGORY: a) Transfers of amounts in excess of those permitted by the fixed percentages established for the remittance of interest, profits, dividends and the return of capital invested in the country.

b) Remittances in the nature of aid or charity, as well as those destined for other permissible purposes.

(Transfers for practically all classifications of these Categories are at present largely in suspense.)

Note: From time to time when export cover is in short supply, the Exchange Control has also subjected certain of the soft currencies to the above procedure. At this time Preferential, First and Fourth Category liquidations are subject to only nominal delay.

PREVIOUS LICENSES

The following types of transactions do not require license and, where imports are concerned, will be accorded priority in allocation of exchange.

1) Imports of:

a) Milk in emulsion or powder of a nature exclusively for infant feeding.

b) Medicines and raw material for the pharmaceutical industry as per detailed list issued by the Ministry of Health and Education.

c) Barbed wire, insecticides and fungicides, fertilizers, seeds, seedlings, pure-bred animals, machines or spare parts and other implements for agriculture and the industrialization of farm and ranch, as well as mineral products, as per list issued by the Ministry of Agriculture, (parts embodying rubber products subject to special legislation).

EXCHANGE PRIORITY (Hard Currencies)

The existing system of exchange priorities came into force in June, 1947, (Instruction No. 25) and was designed to make available hard currency exchange primarily for payments covering essential imports. The present regulations permit banks to use 100% exchange purchased for the purpose of liquidating approved exchange Requests released periodically by the Exchange Control. However, should purchases by banks exceed the Requests allocated for liquidation, the balance of exchange must be resold to the Banco do Brasil S.A. within forty-eight hours.

Application for exchange to the Exchange Control is initiated by the purchaser rather than by the selling bank. These Requests, when approved, are filed by the Exchange Control in chronological order by Categories, and a central control for all Brazil is maintained through the Exchange Authorities in Rio de Janeiro, which provides for a uniform delivery of exchange Requests by Categories to the selling banks. In other words, no particular locality and no bank within a locality normally has an advantage to the extent of obtaining exchange more promptly than banks in the same or in other localities. The Categories under which approved exchange Requests are filed in chronological order are the following:

Preferential Category: Covering importations of agricultural machinery, fuels, lubricants, aluminum, lead, zinc and other scarce metals, as well as pharmaceutical products not manufactured in the country.

First Category: Importation of essential raw materials, goods of prime necessity and products of national interest, such as those included in import license Category Preferential (see comments under heading PREVIOUS LICENSES), as well as importations not subject to previous licensing. Also in this Category are included insurance indemnities, as well as expenses of an unpostponable nature connected with importation or exportation of merchandise.

Second Category: Remittances of royalties, interest, profits, dividends and the return of capital, in accordance with the provisions of Articles 6 and 8 of Decree-Law No. 9025 of February 27, 1946. ("Remittance of interest, profits and dividends shall not exceed 8% of the value of the registered capital, and excess over this percentage shall be considered as transfer of capital" - which may be remitted over a five-year period at 20% per year; see Fifth Category below.)

Third Category: a) Transfer of the proceeds of sales of passenger tickets by authorized companies; remittances corresponding to the net income of foreign telegraph and radio-telegraph companies and remittances destined for the payment of cultural, scientific and educational services, as well as commercial information services.

b) Transfers destined to cover travel expenses abroad within the limits fixed by the Exchange Control, presentation of the passport and ticket being required, and remittance to cover

d) Maps, books, newspapers, magazines and similar publications of a technical, scientific, religious, didactic and literary nature, written in a foreign language, as well as works printed in Portugal in the Portuguese language when by Portuguese or Brazilian authors.

e) Motors, parts and accessories for airplanes, including specific tools where authorized by the Ministry of Aeronautics.

2) Imports by the Government or related Ministries properly authorized by the Executive Power.

3) Provided no exchange coverage is required, articles for Diplomatic missions and Consular offices for their own use where similar treatment is accorded Brazilian representatives abroad; also goods, machines and instruments owned by technical immigrants, as well as articles brought by passengers from abroad which are classified as baggage in accordance with the Customs House regulations.

4) Exports, when payment is effected in hard currencies, of nationally produced:

coffee
carnauba and ouricuri wax
sawed and processed lumber and plywood
cotton
corn
sisal
mate
tea
cocoa
tapioca
diamonds and other precious and semi-precious stones, cut or uncut
Brazil nuts
oil bearing fruits and their respective oils and residues
hides and skins
tobacco and its manufactured products
fresh, candied, dried and preserved fruit
caroa
piacava
cotton, wool, silk and rayon textiles and yarn
refractory material (bricks, refractory parts and refractory cement)
iron and steel rolled plates
machines
scales
rock crystal, mica, carbonates
china and glass for all purposes, including insulators, sanitary ware and tiles
iron ore, cutlery, steel drums
ceramic products of terra cotta and sandstone
fish and vegetable preserves

The following <u>importations</u>, while requiring license, will receive special priority consideration both as to the granting of licenses and the allocation of exchange.

1) Fuels and lubricants.

2) Foodstuffs of primary necessity.

3) Cement and the products required for public works and services.

4) Scientific and hospital apparatus.

5) Raw materials, machinery and equipment for national industry.

6) Railway equipment and chassis for trucks and busses and all accessories and spare parts, (parts embodying rubber products subject to special legislation).

7) Paper and all material, including machinery for the printing of books.

8) Paper for the printing of newspapers and magazines, inks, dry mats, blankets or flex for rotary presses, metal alloys for linotypes and stereotypes, plates and material for photoengraving, linotypes and type and printing presses, their parts and accessories, if imported for the exclusive use of publishers of magazines and newspapers.

9) Specific replacement and consumption material for motion pictures and radio, if imported for their exclusive use by producers of national moving pictures or film processing laboratories, firms owning radio broadcasting stations and by the national radio transmission industry.

10) Devices, parts and accessories, the purpose of which is to prevent labor accidents, either isolated or adapted to machines or engines.

The issuance of an import license does not imply that exchange has been earmarked to liquidate payment of a particular import.

Import licenses, when authorized, will be stamped either Preferential or Non-Preferential to indicate the classification of the merchandise in relation to exchange priority.

The Advisory Committee for Foreign Trade establishes general policy with regard to the operation of the previous license system, and from time to time various supplementary regulations are issued by the Import Export Control. However, the basic exemptions indicated above can only be modified through act of Congress and Executive approval.

COMPENSATION (BARTER) TRANSACTIONS

In order to encourage and/or support the production of exportable native products, where the world market price may have been temporarily affected adversely through exchange devaluation or other causes, the Import Export Control has been approving so-called barter transactions wherein a specific export is tied in with a specific import, with the premium being paid directly by the importer to the exporter. The effect has been that these operations in many cases permit the importation of less essential merchandise for which an import license would otherwise not be approved.

EXCHANGE QUOTAS RELATIVE TO IMPORTS EXEMPT FROM PREVIOUS LICENSE

Although certain types of imports are exempt from previous license, it has been found necessary to establish a system of control over such imports in order to set up an adequate budget of exchange requirements. The procedure in this connection is for the importer to make application to the Exchange Control for quotas applicable to anticipated imports of license-exempt merchandise. When these quotas are approved, one copy of the authenticated application form is dispatched to the exporter abroad who must present it at the time of requesting Consular visa of the shipping document.

PAYMENT OF FREIGHT (ON IMPORTATIONS) IN CRUZEIROS

Effective March 1, 1950, regulations were issued calling for the payment of freight in cruzeiros on importations from abroad. The procedure in general calls for payment of the relative freight charge by the importer to the shipping company's agent in Brazil. Depending on whether the import has been covered by a commercial credit or a sight draft basis, the Exchange Control will furnish exchange covering the freight either immediately or for delivery in 30 days. Accordingly, drafts covering imports should only include cost and insurance. Certain types of transactions of a special nature have been subsequently exempted from the foregoing regulation.

COMMERCIAL CREDITS

The opening of commercial credits is subject to authorization of the Exchange Control which in turn will require presentation of import license in all cases where the latter is called for under Decree No. 24.697-A (Previous License). The application for relative exchange will take its turn in accordance with the priority system explained above and which is determined by the Category in which the merchandise falls. No import credit can be issued until the corresponding exchange has been allocated and closed. It is understood that the Brazilian Consulates abroad are authorized to permit a maximum tolerance of 5% over the approximate value indicated in the import license, but where the relative merchandise is negotiated on the basis of weight and the latter is in excess of the amount indicated in the license only nominal tolerances will be permitted. The Exchange Control on the other hand, for instance, in cases where no previous license is required, will permit supplemental application for exchange up to a 10% excess, in conformity with the established commercial

credit practice where the amount is mentioned as approximate.

EXCHANGE REMITTANCE TAX

A 5% exchange tax is collected on all remittances of funds abroad relative to payment of imported merchandise, freight or other charges, maintenance of family abroad and all other transfers with the following exceptions:

1) Services on Brazilian Federal, State and Municipal external debt.

2) Return of foreign capital, as well as interest and dividends thereon (exemption up to limits authorized by Decree-Law No. 9025. The Brazilian Congress has now before it a recommendation of the President and the Minister of Finance to extend the same privilege to profits).

3) Payments for food products of prime necessity (those exempt from previous license).

4) Fuel, lubricants, duty-free newsprint paper and imported books.

5) Payments to Diplomatic missions, Consular departments and other authorized departments of the Ministry of Foreign Affairs.

6) Authorized transactions between banks.

REGISTRATION OF FOREIGN CAPITAL

In accordance with Article 18 of Decree-Law No. 9025 of February 27, 1946, the registration of foreign capital with the Exchange Control is required before remittance of interest, dividends or profits thereon will be authorized. Foreign capital entering the country, or capital in Brazil which may be acquired by firms or persons resident abroad, subsequent to October 7, 1947, must be registered within 30 days of entry or acquisition. Foreign currency Brazilian external debt obligations need not be registered, but all cruzeiro obligations or certificates representing cruzeiro capital either held abroad or locally must be duly registered in order that remittance of relative income may be authorized.

In addition to the 5% exchange remittance tax mentioned above, there is an income tax of 15% on all income earned in Brazil by residents abroad. This tax becomes payable prior to the remittance or in any case not later than 30 days from date of income credit. Income has been interpreted to include foreign bank collection commissions when paid by the local drawee. This tax must also be deducted from the amount of interest payable to foreign entities for funds advanced.

SPECIAL EXCHANGE AGREEMENTS

The Brazilian Government and/or the Banco do Brasil S.A. have concluded a number of special arrangements with neighboring and other countries to facilitate trade interchange. At the present time these agreements provide for liquidation of transactions in the currencies of the countries mentioned, as follows: Argentina (cruzeiros); Austria (U$S-Aust.); Belgium and the Grand Duchy of Luxembourg and all territories and countries under the control and mandate of Belgium (Belgian francs); Bolivia (cruzeiros); Chile (Chilean pesos); Czechoslovakia (U$S-Tch.); France and all territories and countries under the control and mandate of France (French francs); Federal Republic of Germany (U$S-Alm.); Iceland (pounds sterling); Iraq (pounds sterling); Italy (U$S-Ital.); Occupied Japan (U$S-Jap.); Paraguay (cruzeiros); Portugal (U$S-Port.); United Kingdom and all territories, protectorates, colonies and dominions except Canada (pounds sterling); and Yugoslavia (U$S-Iug.).

There are also certain stipulations as to the currencies applicable to transactions with: Denmark (exports - any hard currency; imports - Danish kroner); The Netherlands (cruzeiros); Spain (exports - any hard currency; imports, for specially designated products - any hard currency, otherwise pesetas); and Sweden (exports - cruzeiros or Swedish kronor; imports - Swedish kronor).

Transactions with Western Hemisphere countries other than those mentioned above would normally be liquidated in United States dollars. For European and other Eastern Hemisphere countries not listed above operations would also be in general effected in dollars or other hard currency. In certain cases, exports to specified countries outside the sterling area have been authorized in pounds sterling.

OTHER LOCAL REGULATIONS

Exporters are required to invest the equivalent of 20% of the FOB value of their exports in 120-day national Treasury Notes.

Banks authorized to deal in exchange are required from August 1, 1948, to deposit in special account with the Official Bank an amount equivalent to the daily deposits received from importers under Decree No. 24.038.

With the exception of direct exchange operations between authorized banks, all transactions in excess of Cr$5.000,00 (equivalent) must pass through an authorized broker and be evidenced by a formal contract. Brokerage is 1/8% to 3/16% depending on the locality.

Exchange transactions (other than inter-bank) are also subject to proportional stamps at the rate of Cr$5,00 per thousand cruzeiros (equivalent) as well as other graduated stamp charges determined by delivery and amount involved.

Authorized banks in Brazil may carry cruzeiro accounts for foreign domiciled individuals and entities, subject to authorization and supervision of movement by the Exchange Control. On these accounts, however, no overdrafts are

permitted under local regulations. All credit and debit entries over foreign-domiciled accounts carry a stamp tax of Cr$5,00 per thousand cruzeiros (equivalent), except entries arising from actual exchange operations and entries representing income or expenses on local assets belonging to the owner of the account.

The free delivery of travelers checks received from abroad to individuals locally is subject to authorization of the Exchange Control and, if exceptionally authorized, will generally only be approved in nominal amounts.

Securities held for foreign-domiciled accounts are also subject to supervision of the Exchange Control, and all movement over such accounts must be officially authorized. There are no restrictions with regard to the entrance into the country of foreign currency securities or foreign currency bank notes; however, shipment of such securities and bank notes from within Brazil to the exterior can only be made upon authorization of the Exchange Control with the exception that travelers are permitted to take out the equivalent of Cr$1.000,00 in foreign currency bank notes without prior approval.

The importation of gold bars, coins, etc., is subject to previous license and exportation continues prohibited under the terms of an old Decree issued October 19, 1933. Of locally mined gold 20% must be sold to the National Treasury at the official market price, but the remaining 80% of local production may be disposed of freely in the local market.

Rates of exchange quoted by authorized banks for commercial transactions must be the same as the official rates fixed by the Banco do Brasil S.A. These rates make allowance for expenses of tax stamps, brokerage, etc. While banks are required under existing regulations to quote rates similar to those of the Banco do Brasil S.A., a trading element becomes involved owing to the requirement that exporters must purchase 20% of the value of their exports in National Treasury Notes. As it is not generally convenient for exporters to carry such investment, the burden of discounting this paper falls on the commercial banks (other than the Banco do Brasil S.A. which is prohibited by law to discount or rediscount them), and the discount rate at which Treasury Notes are taken varies as the respective banks may have greater or less need for cover.

BRITISH GUIANA

The unit of currency is the British Guiana Dollar (100 British half-pennies). Based on the official sterling rate, it has a value at present equal to U.S.$0.5833. Sales of foreign exchange, including forward operations, are permitted with the approval of the Exchange Control.

All imports from foreign countries require import licenses. Issuance of an import license is, in itself, an approval by the Exchange Control for the purchase of the necessary foreign exchange. Provided the permission of the Exchange Control is obtained first, credits can be established without further formalities. Where merchandise has been refused and not cleared from the Customs Warehouse, it may, if necessary, be reshipped without payment of import

duty; however, a license to re-export is required. It is not legal to make a provisional deposit in local currency in cover of a United States documentary collection.

All exports must be covered by export permits. In certain cases exporters may retain the foreign currency proceeds of exports, provided the approval of the Exchange Control is obtained; subsequent use of the funds also requires authorization.

The opening of accounts for residents outside the Scheduled Territories is subject to the approval of the Exchange Control. Debits are allowed for local payments. No transfers may be made in foreign currency without the approval of the Exchange Control. Credits arising from the purchase of foreign exchange are permitted. Credits arising from local sources are subject to approval of the Exchange Control.

Income from or the proceeds from the redemption of securities held in foreign accounts may be remitted. Proceeds from the sale of securities, real estate or other capital assets cannot be transferred, but they can be reinvested in the Colony with the approval of the Exchange Control. Remittances for royalties and inheritances may be made in certain instances, subject to the approval of the Exchange Control. Payments for services are permitted.

Visitors may bring in any amount of British Guiana dollars, as well as United States dollar letters of credit, travelers checks and currency notes without limitation. Such holdings should be declared on arrival, and travelers may carry these instruments out of the country in amounts up to, but not in excess of, the funds brought in. The amount of British Treasury notes a traveler may bring in or take out is limited to £5 per person.

CHILE

The unit of currency is the Peso. The basic official parity rate is 31 pesos to the United States dollar, equivalent to 3.2 cents per peso.

A new Exchange Law (Law 9.839) effective on December 4, 1950, replaced most of the provisions of Law 5.107 of April 19, 1932, and Law 8.403 of December 29, 1945, and through its regulations reorganized the National Board of Foreign Trade and the procedure for the handling of import, export and non-commercial exchange operations. There are two broad categories of exchange, the one in which various official rates established by the National Board of Foreign Trade are applied and the other in which rates are free as determined by supply and demand. All importable merchandise is classified into four groups, designated A-1, A-2, B-1 and B-2, except that which is importable under the gold-law or under the "wine dollar" arrangement which will be discussed below.

A-1 merchandise may be imported in unlimited quantity by an individual or legally established firm at the free rate. This free exchange market is legally established, and operations may be carried on by banks and duly authorized

exchange and securities brokers at rates resulting from supply and demand. At the beginning of 1951 rates for buyers and sellers were 72 and 72.50 pesos to the dollar. No import permits are required for merchandise in the A-1 group, but before merchandise can be cleared from the Customs, the shipping documents, including an invoice in Spanish, must be visaed by the National Board of Foreign Trade. This requirement applies to all incoming merchandise regardless of classification.

A-2 merchandise may also be imported in unlimited quantity but will be paid for at one of the fixed rates of exchange - 31, 43, 50 or 60 pesos to the dollar to be determined by the Board. An import permit will be required for merchandise in this classification and as a general rule they will be issued only to manufacturers and responsible wholesale importers duly inscribed in a special register. Consular visas abroad will be given only if the confirmation of the import permit is presented.

B-1 merchandise can be imported with free market exchange against an import permit, but the quantity will be controlled. Importers are limited to industrialists and importers who have paid their municipal license fees. To obtain the visa of the Chilean Consul abroad it will be necessary to present the confirmation of import permit.

B-2 merchandise will be imported at one of the official rates - 31, 43, 50 or 60 pesos to the dollar - in controlled quantity, subject to an import permit. The other requirements are similar to those for B-1 merchandise.

There is also a list of merchandise that can be imported only against so-called gold dollars. The gold dollars result from the exportation of nationally mined gold and are presently quoted at 145 pesos to the dollar. This list includes, among other luxury items, automobiles and accessories. An import permit is required and the quantity is thereby controlled.

The remaining list of importable merchandise falls under the "wine dollar" category. These dollars are created by the exportation of wine on which the Exchange Board specifies rates between 111 and 126 pesos to the dollar, depending on the country to which shipment is made. The new regulations covering the list of merchandise and the modus operandi are being published separately.

All exports of goods from Chile require permits. Full details on exports saleable at the official rates, predominately copper and nitrate, are still being awaited. The principal items that can be liquidated at the free rate are: metallic and non-metallic mineral concentrates of the medium and small mining companies, most agricultural products, certain manufactured goods, fish in various forms and crude petroleum. Wine exports are made at a special rate to promote the exportation of this product. As stated before the dollars created by these exports are used to import certain luxury goods.

The free exchange market can also be used for certain exchange transactions not involving the importation or exportation of merchandise. Individuals, as distinct from legally established business firms, may buy or sell such non-foreign

trade exchange freely through banks or authorized dealers. Business firms may sell exchange to banks when the exchange is created by commissions, royalties, freight payments and interest. Exchange may be purchased by commercial firms covering such items as expenses abroad and profit remittances, but these transactions require a permit from the National Board of Foreign Trade.

Foreign capital may be brought into Chile at the free rate by individuals without restriction or permission, and the capital or profits may be withdrawn freely through the free market. With the approval of the Board, business firms may also bring foreign capital into the country at the free rate by registering the new capital with the Banco Central de Chile. This capital can be withdrawn in whole or in part at the free rate by surrendering the relative certificate of the Banco Central de Chile; interest and profits produced by this capital can also be remitted at the free rate, approvals for which will be given preference over other profit remittances.

Current accounts in pesos may be carried in the banks in Chile by both resident and non-resident individuals and firms without restriction for handling expenses and other disbursements in Chile. Transactions involving remittances out of the country would be subject to the exchange law regulations given above. Foreign currency accounts may also be carried in banks in Chile, but all transactions passing over such accounts would be subject to the exchange regulations.

Compensation agreements covering exports and imports between Chile and various foreign countries are in force. These agreements generally call for a minimum annual volume of trade between the two countries with the settlement of balances being made by the Banco Central de Chile and the corresponding bank abroad. The unit of currency generally used is the dollar for bookkeeping purposes and the rates in effect are the same as those in use for trade with the United States. The same classifications of merchandise of A-1, A-2, B-1 and B-2 apply to trade under compensation agreements.

Travelers and tourists may bring into Chile letters of credit, travelers checks and other negotiable instruments without restriction and likewise can take such instruments with them when leaving the country. Drafts under travelers letters of credit, travelers checks and miscellaneous checks may be cashed at commercial banks and authorized exchange brokers at the free rate without limit as to amount. Travelers checks or letters of credit can be purchased through banks either with dollars or with pesos at the free rate.

COLOMBIA

The unit of currency is the Colombian Peso, valued at about U.S.$0.51. The official buying and selling rates of the Banco de la Republica are Ps. 1.95 and Ps. 1.96 to the United States dollar respectively. Purchases and sales of foreign exchange are effected by the Banco de la Republica or by commercial banks as its agents. Sales may only be made against permits issued by the Exchange Control. As a rule there are no forward operations.

All foreign funds derived from the following sources must be converted at the official rate:

1) Exportation of coffee, bananas, silver, platinum; jewelry or other articles made with gold, silver, and platinum; precious stones, plain textiles and products of national manufacture containing more than 10% foreign raw materials.

2) Funds destined for use in the petroleum industry.

3) Funds destined for payment of insured losses.

4) Profits earned by Colombian capital invested abroad.

5) Funds representing importation of capital.

6) Payments of life insurance or any other type of insurance.

The system of Exchange Certificates also exists, the Certificates being issued by the Banco de la Republica and commercial banks against delivery of foreign exchange derived from gold production, exports other than the above and various other miscellaneous sources, including exchange sold by travelers. The Certificates are valid for approximately sixty days from date of issue and are freely marketable but only convertible for remittance abroad with the approval of the Control for the following purposes:

1) Payment of expenses of residents abroad, no fixed amount; each case is decided on its merits by the Control. Usually limited to $500 per month. Exceptions are made for diplomats, persons requiring medical attention abroad and students, all of whom are eligible for exchange within limits at the official rate.

2) Remittance to foreign airline and steamship offices in cover of passages from Colombia abroad when such passages are paid in pesos.

3) Payment of machinery and equipment destined for expansion or creation of new factories of benefit to the national economy over and above the quotas granted for importation at the official rate.

4) Importation of luxuries and non-essential articles as determined by the Control, such as wines, liquors, perfumes, cigarettes, etc.

5) Payment of services and similar items.

6) For reimbursement of foreign capital imported into the country during the existence and under the conditions of Section 2, Article 8, Decree 1949 of 1948 (authorized importation of capital through conversion into Exchange Certificates).

If a Certificate is not used within its validity, the holder's only recourse is to deliver it to the Banco de la Republica for redemption in pesos at the official buying rate. Open market quotations of Certificates fluctuated during the last few months of 1950 from Ps. 2.90 to Ps. 3.35 to the dollar, depending upon the supply and demand.

Imports are controlled by import licenses and there are three types as regards the Control's exchange commitment ("reembolso"): ordinary, gradual and non-reimbursable. An indication of the type is shown on the license. Application for exchange against an ordinary license may be made as soon as the required documents are available; in the case of a gradual reimbursement license, application for exchange can be made as the installments mature. No exchange will be supplied against non-reimbursable licenses, shipments against them being considered as capital importations without the right to re-export the principal or the income.

The validity period of an import license is approximately 5 months except for special machinery and equipment, in which case the license may be extended at the discretion of the Control, depending on the time required for manufacture. The original copy of the license is retained by the importer for foreign exchange purposes, and the duplicate must be presented by the foreign exporter to the Colombian Consular agent at the port of shipment. Subject to the exceptions noted in the next paragraph, the issuance of licenses is determined by a basic annual quota granted each importer - commercial samples are excluded from quotas. Percentage allocations are based on estimates of the country's exchange position. Allocations not utilized through failure to take out import licenses are forfeited. No excess tolerance is permitted on shipments.

Occasionally licenses are authorized beyond quota limits in the case of critical materials or if the importation appears essential. Also, the validity of licenses is sometimes extended upon presentation by the Colombian importer of satisfactory documentary evidence that the license could not be used during the initial period of validity; blanket extensions of 30 to 60 days have likewise been granted in periods of cargo congestion at Colombian ports.

Import licenses are required for shipments by air express or parcel post, regardless of the article or its value. Books, magazines and periodicals brought in under subscriptions are excepted as being a personal service.

Resolution No. 17 of 1949 authorized the granting of gradual reimbursement licenses for the importation of specified commodities. The amounts that may be so licensed correspond to 20% of the amount of the annual quota of an importer if the time limit for payment is 1 year, 40% if the limit for payment is 2 years, 60% if the limit for payment is 3 years, 80% if the limit for payment is

4 years and 100% if the limit for payment is 5 years. Provision is made for payment in equal quarter-annual installments, first payment to be due 3 months after the date of the customs manifest which evidences the clearance of the merchandise through the Customs and the payment of the corresponding duties. Exchange remittances in cover of such installments are classified in category 9 of the priorities set up in Resolution No. 7 of 1949 for the granting of exchange licenses. This facility does not give the importer who may avail himself of it any additional import quota rights as the 20% corresponding to each year will be charged to the allocation of quota which may be available to him during that year. It merely provides the importer a means of anticipating allocations of his import quota so that he may bring in at one time a quantity of merchandise which he could not otherwise bring in excepting over a longer period of time if he were to arrange his imports depending entirely upon his normal allocations of quota.

Commercial credits may be opened by banks, subject to the prior approval of the Control, for certain goods, principally raw materials, spare parts, agricultural machinery, fertilizers, seeds, surgical and pharmaceutical instruments and building materials. Subject to the exceptions mentioned below, the credit must provide that payment will be made only against ocean shipping documents - in addition to other required documents. Availments against certificates of manufacture, warehouse receipts, railroad bills of lading and other similar inland documents are not permitted, although exceptions are made for credits covering iron and steel products, subject to United States or other foreign export quotas. The Control may also authorize banks to open commercial credits with cover by Exchange Certificates for machinery or equipment destined for plant expansion or new factories. Anticipated remittances payable with Exchange Certificates covering special machinery, some raw materials and certain merchandise are sometimes permitted, provided a bond is put up to guarantee the future presentation of documents evidencing the completion of the importation.

Instructions accompanying collections should include authorization to accept provisional payment in Colombian pesos against the drawee's written agreement (1) to supply the documents required for an exchange application and (2) to respond for any adverse exchange difference which might occur when remittance is effected. Items drawn on government entities should carry instructions to deliver the draft and documents for examination against drawee's receipt for that purpose.

To obtain an exchange permit in the normal way, in cover of imports, the following documents must be submitted with the application:

Original customs manifest,
Original import license, and
Original signed commercial invoice.

Before the original customs manifest is available and in order to expedite the remittance, the applicant may, at his option, submit a bank undertaking to deliver the manifest at a later date - the undertaking carries a 40% penalty for non-compliance - in which case the application must be accompanied by:

Original import license,
Original signed commercial invoice,
Copy of consular invoice,
Non-negotiable copy of the bill of lading, and
Bank undertaking (as indicated above).

The importer must qualify from a credit standpoint in order to obtain such bank undertakings, and as a commission is charged by the banks for giving undertakings, most importers prefer to wait until the manifest is at hand.

Resolution No. 8 of 1949 as amended provides that the holder of an import license is obliged to submit documentary evidence of the extent to which the license has been utilized and of the amount of the underlying debt, and to apply for the registration of the corresponding exchange application within 60 days following the date of the expiration of the validity period of the respective license. In case of non-compliance with this formality, the Control will delay granting the exchange permit and in certain circumstances will decline to grant the permit. If because of the approaching time limit under this Resolution, or for other reasons, it is desired to register an exchange application without waiting for the customs manifest or putting up a bank undertaking, the following documents will be accepted for that purpose:

Original commercial invoice,
Original import license,
Copy of consular invoice, and
Copy of ocean blading (may be non-negotiable).

Final approval of the application will not be forthcoming until the customs manifest - or bank undertaking in lieu of manifest before the latter document is available - is delivered to the Control. While there is no clear ruling on the point, we are informed that the consular invoice may be a simple copy prepared on the usual printed form.

In the event the original customs manifest is lost or destroyed, it may be substituted by an authenticated copy and a bank undertaking valid for 6 months to assure that the original will not be used.

According to Resolution No. 13 of 1949, the Control will not allow in an import license, nor grant exchange to cover, the amount of premium for any insurance which can be contracted with insurance companies legally established in Colombia. A subsequent ruling clarified that it was permissible to insure a shipment of merchandise with insurance companies not legally established in Colombia when goods are sold on the basis of CIF Colombian port.

Resolution No. 7 of 1949 set up priorities in the following order for the granting of exchange licenses:

1) External debt service.

2) Dividends and earnings on imported capital duly registered as such.

3) Official requirements of National Departmental and Municipal Governments.

4) Debts for which exchange has been guaranteed by the Control.

5) Royalties and patents.

6) Re-insurance premiums.

7) Banking services - commissions, interest, etc.

8) Indispensable technical services.

9) Merchandise imported against gradual reimbursement licenses.

10) Students' expenses abroad.

11) Consular expenses abroad.

12) Reimbursement of bankers irrevocable letters of credit.

13) Merchandise imports not covered by letters of credit.

14) Insurance premiums.

15) Other payments not included above.

The resolution also provided that authorizations for release of exchange within each priority group would take into account the date of the respective debt to be determined by the date of the consular invoice or of the customs manifest.

Exports require a prior license of the Control, and the proceeds in foreign exchange must be delivered to the Banco de la Republica, direct or through authorized banks, within 30 days from the date of the export license. Except where eligible for Exchange Certificates, as previously mentioned, such exchange must be sold at the official rate.

Taxes are imposed on all transactions that result in the exportation of foreign exchange, in decrease of foreign currency reserves or that prevent or restrict the increase of such reserves. A tax of 4% - computed on the equivalent in pesos converted at the official buying exchange rate - is imposed on all types of remittances, including those for merchandise, and in addition the following taxes are applicable on remittances for the purposes indicated:

6% for payment of royalties for exhibition of films,

6% for payment of remuneration to theatre companies, circuses and similar talent (with exception of athletes and concert artists, exempted), and

30% on remittances for expenses of Colombians abroad or of foreigners from funds received or earned in Colombia (income on, and principal of, registered imported foreign capital excepted).

Travelers checks and travelers letters of credit may be issued by banks in Colombia on instructions from their correspondent banks or Head Office abroad, free of tax on delivery, if issuance and delivery is effected free of payment. Such instruments under like conditions may be sent from abroad to banks in Colombia for delivery to the beneficiaries without payment of tax. This facility is available only to beneficiaries who are transients in Colombia and not to residents of the country. Travelers (transients) are usually not required to declare their funds either upon entering or leaving Colombia, but it is advisable to take that precaution upon entering the country.

Capital in the form of foreign exchange and/or industrial, agricultural or mining machinery may be brought into Colombia, subject to prior license of the Control. If the capital is for a new industry, a favorable ruling of the Ministry of Commerce & Industry must be obtained. In order to qualify for remittance of income and for eventual re-export of principal, the capital must be registered as such with the Control at the time of import, and if the importation is made in foreign exchange, it must be sold at the official rate to the Banco de la Republica or to an authorized commercial bank as agent.

By Resolution No. 51 of 1950 the Control suspended the issuance of licenses for the importation of capital in the form of merchandise but with the exception that licenses may be issued for the importation of certain types of raw materials for their own use as capital by industries established hereafter with imported capital. Raw materials so imported as capital may not exceed 100% of the value of machinery or foreign exchange brought in as capital for the industry. Furthermore, licenses may be issued to new industries to import, as part of working capital, finished goods in the same lines as the industry is to produce, up to a prudent amount to be fixed in each case by the Control. The value of the raw materials or finished goods imported as working capital will not be eligible for registration at the Control as imported capital. Consequently, such unregistered capital will not be eligible for subsequent repatriation, nor will its earnings be eligible for remittance abroad. The provisions of Resolution No. 51 do not apply to the petroleum and mining industries.

Resolution No. 59 of 1950 provides that remittances in foreign currency will be authorized at the official rate in payment of royalties on trademarks, patents, industrial drawings and models, provided they are used in manufacturing articles in which more than 90% domestic raw materials are used. In all other cases remittance of royalties will have to be covered through the exchange certificate market.

Remittance of royalties, as mentioned above, will only be authorized, provided the corresponding contracts shall have been previously approved by the Control. Remittances of royalties under contracts approved prior to the effective date of Resolution 59 will continue to be made on the basis authorized in such approval until the end of the yearly period for which the respective contract was approved.

Exchange Control Accord No. 17 of 1949 reads in part as follows:

1) The Control will grant licenses for the remittance of profits which arise directly and exclusively from capital imported and registered at the Control as legally capitalized;

2) When the capitalization is made in practice, but without prior approval of the Control, the interested parties must request the approval of the Control which may approve and permit registration, if the profits are eligible for exportation, or disapprove if the capitalization should not be in the national interest. In this last instance the Control must grant exchange permit for the exportation of the profits, provided the holder is entitled to it;

3) The amount authorized, whether to capitalize profits or to remit them, shall be in the (same) ratio to capital imported, plus subsequent authorized capitalization of profits, as the total profits bear to the patrimony;

4) It is understood that the oil companies and those which engage in the exploitation of gold, silver, and platinum mines have the rights granted to them by the respective laws, resolutions and decrees;

5) The remittance of profits or their capitalization must be requested within the semester following the year in which they were earned.

The re-export of capital brought into Colombia prior to February 19, 1935, or of capital not registered with the Control, and the remittance of income on such capital, are not authorized as such. However, under the heading of remittances for expenses of residents abroad that may be covered by Exchange Certificates, the Control is willing to consider applications up to U.S.$500 per month against funds blocked in non-resident accounts.

Withdrawal of funds from non-resident accounts are subject to the 4% stamp tax and the 30% non-resident tax, except:

a) Where the account has capital and income export rights in which case only the stamp tax, 4%, is imposed, or

b) Where the funds withdrawn are to be invested in Colombian securities in which case no tax is imposed on the withdrawal. However, securities thus purchased are of necessity also blocked.

Cash funds or securities, whether in foreign currency or in any way controlled by persons or entities outside Colombia, are included in the definition of foreign exchange, and all transactions therein are subject to the prior approval of the Control. Non-resident investors are required to file an income tax declaration annually either personally or through a registered Colombian lawyer.

Any infraction of laws and regulations concerning exchange, importation and exportation is punishable with a fine of up to 300% of the amount involved, and suspension of import or export licenses for a term of one year.

ECUADOR

The monetary unit is the Sucre.

The Emergency Law of June 5, 1947, covering exchange, imports and exports expired November 30, 1950, and was supplanted by Decree-Law No. 1864 of the same date. This new law devalued the sucre, setting the new official parity at 0.052447 grams of fine gold or 15 sucres to the dollar. The change in the official rate was accompanied by the elimination of the multiple taxes and surcharges previously applying to import permits and the establishment of new ones as indicated further on. The Banco Central del Ecuador continues to control exports, imports and foreign exchange under the law and all transactions at the official rate are concentrated in that bank.

With certain exceptions all exports require a prior permit, and the proceeds must be sold to the Banco Central del Ecuador at its official buying rate of Sucres 15 per U.S.$1.

The new exchange law again revised the classification of merchandise that may be imported into the country. As heretofore the classification is in three groups - List A representing indispensables; List B, useful goods and List C, luxuries. In addition, with the consent of the Authorities certain merchandise may be brought in under a system of compensation. Prior import permits are required, the original to be forwarded by the importer to the shipper who must present it to the Ecuadorian Consul to obtain his visa on the shipping documents. Imports under Groups A and B are liquidated at the official selling rate of Sucre 15.15 per U.S.$1. Those importing Group B merchandise must pay a tax of 33% on the value of the import permit. At the present time 60% of this tax is payable prior to obtaining the import permit and 40% on liquidation of the exchange after arrival of the documents. Group C merchandise is liquidated at the free market rate, about Sucres 18.50 per U.S.$1 at this time, and the corresponding foreign exchange must be purchased in the open market and deposited in the Banco Central del Ecuador prior to obtaining the import permit. Also, a tax of 44% on the value of the import permit must be paid - in this case 100% of the tax is

payable in advance. The rate for compensation imports, like the free market rate, reflects the interplay of supply and demand but normally is higher than the free market rate. Compensation merchandise bears the same 44% tax as Group C merchandise.

The Banco Central del Ecuador is obliged by law to supply exchange at the official rate for all goods classified as indispensable and useful (A and B) upon receipt of an exchange application from the collecting bank or the importer as the case may be, providing the application and corresponding documents are accompanied by a proof of deposit in the Banco Central del Ecuador of the equivalent amount in local currency. The validity of the import permit is for 125 days for goods from the United States and 180 days for other countries, both subject to extension if circumstances warrant.

Import commercial credits in foreign currency may be opened only by the Banco Central del Ecuador; however, imports are also facilitated through the medium of letters of guaranty issued by the local commercial banks. Unlike a commercial credit such a guaranty does not provide for payment in foreign currency but is intended to assure that the relative import permit has been obtained and that the equivalent in local currency will be deposited to cover the foreign exchange required. Transshipment of goods free of customs duties is permissible under certain conditions.

Incoming capital for investment in the country, which is registered with the Banco Central del Ecuador, must be sold to the Banco Central del Ecuador at its official buying rate of Sucres 15 per U.S.$1. Dividends, profits, interest and amortization on such capital is entitled by law to be remitted abroad at the official rate. Where incoming capital is not so registered, the free market must be used for both the incoming and the outgoing operations.

In addition to imports included in Lists A and B, the Banco Central del Ecuador will sell official exchange for the payment of interest and amortization on loans contracted abroad and registered with the Banco Central del Ecuador, as well as for payments indispensable to Government entities and expenses of students. Incoming exchange to pay salaries, taxes and other expenses of foreign companies established in the country must be sold to the Banco Central del Ecuador at the official rate.

Included among the sources of free market exchange other than non-registered incoming capital are the exports of gold and certain other mining products, repatriation of Ecuadorean capital, receipts from foreign insurance companies, commissions, foreign exchange brought in by diplomats, tourists, students and foreign families in Ecuador.

Deposit accounts in foreign currency domiciled abroad are permissible with the Banco Central del Ecuador and are freely operated under their jurisdiction.

FALKLAND ISLANDS

British West Indian £ = U.S.$2.80.

Exchange control based on regulations in force in the United Kingdom.
All goods require import licenses, other than those of United Kingdom origin which, with the exception of foodstuffs, may be imported under open general license.
Export licenses are required for certain domestic products.

FRENCH GUIANA

The monetary unit is the French Franc (Continental Franc). Dollar exchange is bought and sold at the Paris free market rate, subject to a small commission charge. Exchange operations and foreign trade are under official control and imports must be covered by license.

As French Guiana is an integral part of Continental France, i.e., an Overseas Department, and is governed by the French exchange regulations, see France, page 67, for further details.

PARAGUAY

The monetary unit is the Guarani.

All dealings in foreign exchange are controlled by the Banco del Paraguay, and under legal provisions currently in force all purchases and sales of foreign exchange must be made exclusively through the Banco del Paraguay or through other institutions authorized to handle foreign exchange for account of that bank.

Exporters are required to sell all the foreign exchange resulting from exports at the corresponding official rates for the commodities involved. These export rates are as follows:

1) 3.059 guaranies per dollar (about 33¢ per guarani) for certain Government receipts.

2) 4.92 guaranies per dollar (about 20¢ per guarani) for basic exports, such as hides, quebracho extract, certain woods, cotton, rice and some meat products.

3) 6.02 guaranies per dollar (about 16½¢ per guarani) for products difficult to sell outside of Paraguay, such as petitgrain oil, some vegetable oils and tobacco.

4) 7.99 guaranies per dollar (about 12½¢ per guarani) for non-commercial transactions, such as investment capital and diplomatic funds.

Importations into Paraguay are divided into four categories for which the following rates of exchange have been established:

1) 3.121 guaranies per dollar (about 32¢ per guarani) for certain Government financial services and Group I imports, such as petroleum and fuel oil and some of their by-products, wheat flour and refined mineral oils.

2) 4.9821 guaranies per dollar (about 20¢ per guarani) for Group II imports, such as certain agricultural seeds, salt, medicinals and some chemicals.

3) 6.0821 guaranies per dollar (about 16½¢ per guarani) for Group III imports which include tires, some wool textiles, newsprint, agricultural equipment, hardware, industrial machinery, iron and steel products and many raw materials.

4) 8.0521 guaranies per dollar (about 12½¢ per guarani) for Group IV (a) imports, such as building materials, electric motors and equipment, automobile spare parts, bicycles, typewriters, cameras, film and glassware. This same rate also applies to Group IV (b) imports which consist of all those products not included in any other Group and which are not considered as being essential to the economy of the country.

Before placing orders abroad, importers are required to close exchange purchase contracts which are issued for a maximum period of 270 days. Under existing regulations this contract serves the double purpose of an import license and an undertaking on the part of the Banco del Paraguay to sell the corresponding exchange at the rate fixed thereon once the merchandise has been cleared through the Customs. Before obtaining their exchange contracts, importers must make a deposit in guaranies with the Banco del Paraguay, which varies with the category of goods to be imported; in the case of Group I goods, the deposit is 10% of their value; Group II - 15%; Group III - 20% and Group IV - 25%. At the request of the importer these deposits may be transferred to a bank to be applied in part payment of the bill covering the merchandise or may be returned to the importer if the goods have been cleared through the Customs and the corresponding exchange contract has been cancelled.

Provisional deposits in local currency in connection with collections are not compulsory, but it is customary market practice to request such deposits before surrendering documents. Drawees are unable to apply for the transfer of funds abroad in payment of imports until the completion of all formalities in the Customs.

Imports into Paraguay may be financed under documentary letters of credit which local banks are authorized to open on behalf of those customers who hold valid exchange purchase contracts. Before letters of credit can be opened, importers must make minimum deposits in guarantee as follows: 25% of the value of the

goods if included in Group I, 40% if in Group II, 75% if in Group III and 100% if in Group IV.

As shipment to Paraguay must be transshipped from ocean steamer to river steamer at either Montevideo, Uruguay, or Buenos Aires, Argentina, our correspondents in Asuncion suggest the advisability of prior agreement between the buyer and the seller upon the port of transshipment, the name of the forwarder and the documentation required.

Persons entering the country may carry with them any amount or kind of foreign or local currency, letters of credit, travelers checks, etc., but lawfully may only negotiate in such foreign exchange through the Banco del Paraguay or the institutions authorized to handle foreign exchange on its behalf. There are no restrictions against carrying any unused portions of such values upon leaving the country.

PERU

The monetary unit is the Sol. The basic exchange law is No. 11208 of November 11, 1949, which suspended the old official parity of the sol (6.50 to the dollar) and left all exchange subject to free market conditions.

Two classes of exchange exist - that arising from exports of merchandise which is designated certificate exchange and that arising from all other operations which is referred to as free exchange.

All exports require a prior permit; these are issued only after the exchange corresponding to 100% of the foreign currency value of the shipment has been delivered to the Banco Central de Reserva del Peru. In return for this exchange the Banco Central de Reserva del Peru issues foreign currency certificates valid for 60 days; these are transferable by endorsement to one bank only and are sold to importers at the prevailing rates for such certificates. The Government, however, is given preference for the purchase of certificates and those that have not been used within their validity date will be purchased by the Banco Central de Reserva del Peru at a 2% discount. Of late the Government has been actively supporting both the certificate and the free market dollar rate by purchasing any excess exchange at S/.14.95.

Import permits are not required, but with the exception to be noted below only merchandise included in the permissible list may be imported freely and may be paid for through the purchase of foreign currency certificate exchange or by the purchase of exchange in the free market. Foreign exporters can obtain full details of the items figuring on the permitted list from the nearest Peruvian Consul. Any merchandise not on the permitted list, which might arrive at Peruvian ports, is subject to confiscation by the Customs. Decree-Law No. 11076 of August 5, 1949, provides, however, for the importation of all merchandise, including articles not on the permitted list, from countries not having freely convertible currencies when the balances of such currencies are declared to be in excess. Sterling and Argentine paper pesos have been declared in excess and

while the situation exists, merchandise of all types may be imported freely from Argentina, the sterling area or other countries where sterling transfers from Peruvian accounts are authorized by the Bank of England and the Banco Central de Reserva del Peru.

With the prior approval of the Minister of Finance, foreign currency certificates may also be used to remit profits of foreign companies to their home offices, amortizations for depreciation, administration expenses and other foreign currency obligations, including payments to foreign technicians or specialists who have come to the country for special services. Remittances to cover these categories may also be made through the free market.

In particular reference to commercial credit availments to be liquidated through the medium of foreign currency certificates, the regulations further provide that if for reasons beyond the control of the importer, the merchandise is not shipped within the usance of the credit, the Banco Central de Reserva del Peru has authority to issue a new certificate for the amount outstanding. However, 90 days is the limit of time during which a commercial credit opened on the basis of foreign currency certificates may remain outstanding, although extensions may be granted at the discretion of the Superintendent of Banks.

As heretofore travelers may enter or leave Peru with unlimited amounts of foreign currency and no declaration is required. Banks are permitted to issue travelers checks, drafts or pay foreign currency against letters of credit, that is, to exchange dollar for dollar in any form. There are no restrictions on deposit accounts in soles for persons domiciled outside of Peru. Accounts in foreign currency are also permitted, and Decree-Law No. 11208 of November 11 further stipulates that the Government will guarantee the free availability of such foreign currency deposits.

Foreign currency, checks, drafts and transfers may be made in the free market without restriction as to the purpose for which the exchange is required. Banks, brokers, hotels and others are permitted to deal in free exchange without limitations.

Under date of July 14, 1950, the Government issued a decree providing for the liquidation of old pending import engagements in official exchange at the ex-official rate of S/.6.50 per U.S.$1, or its equivalent in other currencies, providing the obligations are duly inscribed in the registry established for that purpose. The payment of these recognized obligations will be in local currency at a rate to be fixed by the Government, corresponding to each currency involved and within a time limit of 4 years. The budget just approved for the present year includes a provision of S/.13,000.000 for meeting the payments of the first year under the plan. The regulations governing the modus operandi of the decree of July 14, 1950, remain to be issued.

SURINAM

The unit of currency is the Surinam Guilder (Fl.) which is currently quoted at

U.S.$0.5249.

The exchange rate of the United States dollar is officially established at Fl. 1.86 1/2 buying and Fl. 1.90 1/2 selling. All transactions involving foreign currencies are strictly controlled and must have the consent of the Foreign Exchange Committee.

The Government controls the importation of merchandise. It is prohibited to bring in certain items and others are on a restricted basis. Generally speaking, goods on the prohibited and restricted lists are luxuries and those on the unrestricted list are foodstuffs and other essentials. All imports are subject to license granted to importers on a quota basis. We are informed that exchange is automatically available for all imports covered by license. In other words the issuance of a license implies the allotment of the required exchange.

To protect himself an American shipper can obtain proof from his customer in Surinam that the necessary license has been secured. For this purpose the Import Control Board supplies the importer, after his application for license has been approved, with a copy of his order duly authenticated by the Import Control Board. This order-copy shows the number of the license which covers the importation in question. Import licenses are valid for eight months, but where necessary applications for extensions are given consideration.

We understand that the Government refuses import licenses to importers who have drafts outstanding for more than 3 months. The names of importers having unpaid drafts past due more than 3 months are put on a black list until such time as they have cleared the outstanding drafts.

As of March 1, 1950, the importation of Surinam bank notes as well as currency notes was prohibited.

URUGUAY

The unit of currency is the Uruguayan Peso.

Exporters are required to sell the foreign exchange value of exports at rates established by the Banco de la Republica Oriental del Uruguay. These rates, together with some of the principal products which have been assigned to them, are at present as follows:

1) Controlled market cable rate of Urug. $151.90 per U.S.$100 (about 65.8¢ per peso) for basic exports, such as greasy and washed wool, most meat products, livestock, sheep skins, salted and dried hides, linseed, wheat and wheat flour and oleaginous seeds in general.

2) Free controlled market cable rate of Urug. $235 per U.S.$100 (about 42½¢ per peso) for such products as combed wool tops, knitted wool articles, pork products, tanned

and semi-tanned hides and manufactured products.

3) A combination of 68% of controlled exchange (Urug. $151.90) and 32% of free controlled exchange (Urug. $235), which results in a net cable rate of around Urug. $178 per U.S.$100 (about 56.2¢ per peso) for certain exports, such as linseed oil, wild animal hides, some packing house products, expellers and oleaginous cakes.

4) Exporters of some products, principally manufactured and semi-manufactured which normally move out at the above rates, are sometimes given a premium to assist them in marketing such goods abroad. The amount of this premium and the length of time for which it is granted varies in each case.

Imports must likewise be settled at established rates which currently are as follows:

1) Controlled market cable rate of Urug. $190 per U.S.$100 (about 52.6¢ per peso) for raw materials and other essential merchandise.

2) Free controlled market rate of Urug. $245 per U.S.$100 (about 40.8¢ per peso) for non-essential but needed imports and some luxury items.

3) Compensated rate which represents the free controlled rate (Urug. $245) plus a premium to be determined in each case for products considered to be luxuries, principally automobiles and electric refrigerators. This premium is paid at present to exporters of edible oils, the system having been developed at a time when there were relatively sizeable quantities of edible oils available for export but which could not be placed abroad at world market prices without a more favorable export exchange rate. It is generally believed that this compensated rate is a temporary measure.

A prior import permit is not required for the importation of first-category goods - which are those considered essential to the economy of the country, such as agricultural and industrial machines and spare parts, rubber, tinplate, carbon black, fuel oil and petroleum, sundry iron products and some medicinals - from the Argentine, Belgium, Canada, France, Germany, Holland, Italy, Japan, Sweden, Switzerland, and the United States; importers must, however, make a sworn declaration to the Export and Import Control Board within 48 hours after the order has been closed abroad indicating all pertinent details as to the transaction involved, such as origin and type of merchandise and value. Importers must obtain an import permit prior to closing an order abroad for first-category goods to be imported from countries other than those mentioned above,

as well as for all second and third-category goods which consist of not so essential but needed imports.

While such sworn declarations and import permits do not bear indication of a formal guarantee or undertaking on the part of the Exchange Authorities to allocate the necessary exchange, it is generally understood that the corresponding cover is set aside and earmarked for the specific purpose declared by the importer at the time the sworn declarations are filed or the permits are issued. Should merchandise arrive without the corresponding sworn declaration having been filed or import permit granted, a fine is imposed on the importer.

Importers must present to the Export and Import Control Board an application for Customs clearance of merchandise within 360 days of the date of issuance of the import permit or date of presentation of the sworn declaration except in the case of imports from bordering countries (Argentina, Brazil and Paraguay) when such applications must be made within 180 days. An extension of this period will be considered if shipment has been delayed for certain justifiable unforeseen reasons and evidence to that effect obtained from the Uruguayan Consulate is submitted to the Authorities. The following regulations also affect the validity of import permits:

1) When an import permit expires after the merchandise has been shipped, the expiration date will be automatically extended up to the arrival of the merchandise.

2) In every case the application for Customs clearance of the merchandise must be presented within 90 days after arrival of the merchandise at the Uruguayan port of discharge, even when the import permit does not expire within this period.

Banks must have in their possession the sworn declaration or the import permit and the relative shipping documents - or have such documents submitted to them by the importer - prior to selling the exchange, whether on a spot or a future basis, and such documents should consist of: a) commercial invoice, b) bill of lading, airway bill or parcel post receipt and c) consular invoice. Banks are required to issue a certificate of sale of exchange on all controlled or free controlled exchange sold; this certificate together with the bill of lading and other documentation is essential for clearance of the merchandise from the Customs.

While a great number of imports are financed under commercial credits, a large percentage continue to arrive on a documentary sight collection basis as under present regulations banks can effect remittance abroad upon arrival of the documents and presentation by the importer of the corresponding sworn declaration or import permit. Uruguay does not require a provisional deposit in local

currency covering documentary collections prior to the clearance of merchandise; such merchandise can only be cleared by the importer through the presentation of the shipping documents together with a certificate of sale of exchange from a bank. No duties are applicable to merchandise which is shipped to Uruguay in transit and which is not cleared through the Customs. It is necessary to obtain permission from the Authorities for the re-exportation of any merchandise - except in transit - shipped direct to Uruguay.

Uruguay has payment agreements at present with Argentina, Belgium, France, Germany, Holland, Sweden and the United Kingdom. As a result of these agreements all transactions with those countries must be settled in the currency of the respective countries, with the exception that operations with France and Germany are executed in so-called agreement dollars for clearing purposes under the trade agreements.

The free market, which at this time is quoted at Urug. $206 per U.S.$100 (about 48 1/2¢ per peso), is used for all transactions which do not involve either the export or import of merchandise. Sales of dollars in the free market covering transfers to the United States or to any other North, Central or South American country, except Argentina, may be made without limitation, provided they do not represent merchandise payments. Remittances to Argentina and Europe must be previously authorized by the Banco de la Republica Oriental del Uruguay, with the exception of small transfers in Argentine paper pesos, Belgian francs, florins, French agreement dollars, pounds sterling and Swedish crowns for sums not exceeding Arg. Paper Pesos 200, Bel. Frs. 4,000, Fls. 100, French agreement dollars 60, £20, and Swed. Crowns 200. These small remittances can be effected freely in accordance with standing regulations of the Banco de la Republica Oriental del Uruguay and within the terms of existing payment agreements between the Uruguayan Government and the Governments of Argentina, Belgium, France, Holland, Sweden and the United Kingdom for transactions with Argentina, the Belgian Franc Monetary Zone, the French Monetary Zone, the Florin Monetary Zone, the Swedish Crown Monetary Zone and the sterling area. All remittances to Germany under the German-Uruguayan agreement must be previously authorized by the Banco de la Republica Oriental del Uruguay.

All restrictions have been eliminated on the inflow of capital or funds coming from abroad, with the exception of purchases of Argentine paper pesos, Belgian francs, florins, French agreement dollars, German agreement dollars, pounds sterling and Swedish crowns, since a prior permit is required from the Banco de la Republica Oriental del Uruguay for purchases of these currencies when the amounts of any individual transaction exceed Arg. Paper Pesos 200, Bel. Frs. 20,000, Fls. 200, French agreement dollars 290, £25, and Swed. Crowns 200. Purchases of German agreement dollars must be previously authorized in all cases. All other currencies, including payment orders in Uruguayan pesos, are freely permitted to enter the country, and a prior permit is not necessary for effecting the relative payments to the beneficiaries. Since August, 1948, accounts of foreign domiciled depositors in pesos or in dollars have been freely operative without the necessity of obtaining the prior approval from the Authorities. All

movement over such accounts, whether deposits or withdrawals, is subject to a tax of 1/20 of 1%.

A tax of 3/4 of one per mille is applicable on all funds remitted outside of the country and a tax of 1/2 of one per mille is applied on all incoming funds.

Visitors to Uruguay are not required to declare their holdings of travel funds upon entering the country and as a consequence may bring in travel funds in the form of letters of credit, travelers checks and currency without limitation. Likewise the traveler may carry such instruments freely upon leaving the country.

VENEZUELA

The monetary unit is the Bolivar, valued at about U.S.$0.30.

The Banco Central de Venezuela has established various exchange rates which have the effect of stabilizing exchange with relation to the United States dollar. It sells exchange freely to the commercial banks at Bs.3.33 1/2 per U.S.$1 and the commercial banks in turn sell to the general public at Bs.3.35 sight on New York and Bs.3.36 cable on New York. The Banco Central de Venezuela buys dollars from the petroleum companies for account of the Government at Bs.3.09; however, if at the end of the year the Banco Central de Venezuela has not been able to sell all the dollars purchased from the petroleum companies, the latter will refund the difference between Bs.3.09 and Bs.3.02 for the excess. It also buys for Government account dollars arising from the export of cocoa at Bs.4.25 and dollars arising from the export of coffee at Bs.4.25 for "thrashed" and Bs.4.80 for "washed". In effect the shippers of cocoa and coffee have enjoyed an exchange subsidy. The dollars acquired by the Government in this manner are resold to the Banco Central de Venezuela at Bs.3.32. An exporter can freely dispose of the foreign currency proceeds of his shipments, but in the case of coffee and cocoa exports the foreign currency must be sold to the Banco Central de Venezuela if he desires to take advantage of the special rates mentioned above. Such sales may be either directly to the Banco Central de Venezuela or through one of the banks operating in Venezuela, but shipping documents must be produced. For some time, however, due to the high prices of coffee, which are above the limits fixed as subsidy for coffee producers, the Banco Central de Venezuela has not been negotiating coffee drafts. The holdings of the Banco Central de Venezuela in dollar exchange and gold are ample, and dollar exchange is available at present without restriction for all the country's needs.

A number of items are still subject to an import license to be obtained from the Comision Nacional de Abastecimientos. Such quota limitations are primarily to protect local industries, and no exchange allocations are involved. Where these commodities are concerned, Venezuelan import license numbers should always be shown on consular invoices. Importation of merchandise is customarily effected on sight or time draft basis. Bankers commercial credits are also used to some extent, but usually when required by sellers or when a price

advántage to the buyer makes such basis acceptable to him. There are no special formalities required for commercial credits as exchange is freely available. Bills of lading issued to "order blank endorsed" are not acceptable by law in Venezuela. Merchandise imported into the country must be consigned to individuals or firms, and it is required that one signed copy of the bill of lading and three copies of the consular invoice be visaed by the Venezuelan Consulate. It is general practice for importers in Venezuela to accept time drafts or pay sight drafts only after the merchandise has been received in their own establishment; therefore, before shipping there should be a clear understanding between the exporter and the importer as to how the goods are to be consigned, and whether the consignee may release the goods to the drawee before payment or acceptance of covering draft. Merchandise can be re-exported in case of need, but duties are not refunded.

The Ministry of Finance through the Department of Customs recently notified all the Venezuelan Consuls that exporters to Venezuela, in order to protect their interests and to avoid the possibility of importers taking possession of the merchandise - by means of a bond or guaranty lodged with the Customs Authorities - without paying for the relative draft, should mark in red ink on all copies of the consular invoice the following: EMBARQUE CONTRA DOCUMENTO MEDIANTE PAGO DE GIRO A LA VISTA, ENVIADO AL BANCO ..... which translated means "Shipment against documents subject to payment of sight draft, sent to .....".
(name of bank)

Persons contemplating business or pleasure trips to Venezuela may carry travel funds in foreign currency without limitation as to amounts in travelers checks, travelers letters of credit or foreign currency bills. Travelers are not required to declare such personal holdings upon entering or leaving the country.

EUROPE

BELGIUM AND LUXEMBOURG

At the end of 1950 the United States dollar was quoted at Francs 50 to U.S.$1.

All dealings in foreign exchange are under the control of the Belgian-Luxembourg Exchange Institute. Under this control transactions may be executed in line with general or particular licenses by the approved banks and to a limited degree by some authorized brokers. The National Bank of Belgium alone is entrusted with the import and export of gold. Forward operations in exchange are permitted through the approved Belgian banks in connection with import and export business only, and among the authorized forward transactions are dealings in United States dollars. Contracts are made for periods not in excess of 6 months. When justified, the contract is susceptible of renewal or extension.

NON-RESIDENT ACCOUNTS

Approved banks may carry non-resident accounts in foreign currency (United States dollars) and in Belgian francs or Luxembourg francs. The accounts in the local currencies are designated Foreign accounts and the two classifications are Foreign B and Foreign Banknote.

Foreign B account funds of Americans can be freely used for payments in the Belgian Monetary Area, including payments for exports of merchandise, and can be converted upon request into United States dollars. Balances in American B accounts may also be transferred to other B accounts regardless of nationality.

Foreign Banknote accounts may be credited with franc amounts transferred from Banque Nationale de Belgique covering remittances of Belgian bank notes received by that bank from remitters abroad. Also eligible for credit to Foreign Banknote accounts are transfers from other Foreign Banknote accounts, but transferability from country to country is limited to those whose owners reside in countries which are members of the E.P.U. (European Payments Union). Debits may be passed over such accounts for certain payments in the Belgian Monetary Area, including payments covering goods to be exported from the Belgo-Luxembourg Economic Union. However, Foreign Banknote accounts may not be utilized for the purchase of foreign currency, crediting a Foreign B account, or the purchase of Belgian, Luxembourg and Colonial securities.

EXPORTS AND IMPORTS

All exports and imports are subject to control of the Exchange Institute. Goods may be divided into two categories, namely, those which may be imported or exported under bank declaration, and those for which an import or export license or priority certificate is required. Bank declarations for imports are known as forms F and G. Form F is the declaration form required if the importer (a) does not possess the foreign exchange necessary to pay for the importation of the merchandise or (b) possesses the necessary foreign exchange on a Belgian bank account. Importers may submit this form for visa to any authorized commercial bank, but in the case of a certain number of specified articles, if payment is to be made in United States dollars, Canadian dollars or Belgian francs to an

exporter of the so-called dollar area (United States and dependencies, Mexico, Central and South America except Argentina, Brazil, Chile and Colombia), authorized banks are allowed to give the visa, provided the seller resides in the country from which the goods are exported. Form G is used by the importer if he possesses a bank account in the country of the seller in the national currency. In the case of goods for which a license or priority certificate is required, the form is issued by the Office Central de Licences et Contingents. Under both (a) and (b) as mentioned above in connection with form F, the document, which is issued automatically, carries with it authorization to effect payment in line with the terms stipulated in the document. Approved banks are allowed to open commercial credits on production of the declaration form or import license with priority certificate and no other formalities are required. The import may also be financed under collection terms, either delivery of documents against payment or delivery of documents against acceptance, on a consignment basis or by payment on receipt of documents or receipt of the merchandise. Re-export of goods can be arranged.

E.R.P. TRANSACTIONS

All importations of merchandise into Belgium and Luxembourg from the Western Hemisphere, involving payment in United States dollars in amounts exceeding $500 (transshipments excepted), are subject to the regulations of the Economic Cooperation Administration as to documentation. In connection with this regulation it must be observed:

1) That the Exchange Institute repealed the previous requirement that shipments for a value exceeding $5000 can be settled only on a documentary letter of credit basis.

2) That for all importations subject to the above regulation, whether they are to be settled on a letter of credit basis or on a documentary collection basis, shippers will be required to submit the following additional documentation, all of which must bear the ECA Procurement Authorization and sub-authorization numbers which should be furnished by the Belgian importer:

   a) A supplier's certificate in the form provided for by the ECA.

   b) A copy of the supplier's invoice, duly receipted, showing quantity, quality, prices and conditions of delivery (C&F, CIF, FOB, FAS) of the goods. (Where conditions of delivery are on a C&F or CIF basis, the amount of the freight, insurance premium and other accessory expenses must be shown on the invoice.)

   c) One copy or photostat of the ocean bill of lading, charter party bill of lading or airway bill of lading or any other documents relating to the transport of the goods from the country of origin to Belgian or Luxembourg territory. (Where the point of disembarkation in Europe is

situated outside Belgian or Luxembourg territory, the sea or air transport documents must be marked "For transshipment to Belgium or Luxembourg".)

3) That imports of raw cotton are subject to special provisions.

TRAVEL

Travelers may bring into the Belgo-Luxembourg Economic Union, Belgian or foreign currency in bank notes or other means of payment without limit. However, if they wish to re-export in bank notes (Belgian or foreign) an amount exceeding the equivalent of Belgian Francs 10,000, the amount carried upon entry must be noted in the passport at Customs. In no case may Belgian bank notes for an amount exceeding Belgian Francs 10,000 be re-exported; the surplus must be placed in a Foreign B account. On the other hand, Belgian bank notes for which evidence can be produced that they have been withdrawn from a Foreign B account or are the proceeds of the sale of foreign instruments of payment may be credited to a Foreign B account. Approved Belgian banks may cash any instruments of payment drawn by their correspondents against their Foreign B accounts, as well as any checks drawn by the holders of Foreign B accounts during their stay in Belgium.

CYPRUS

Local £ = U.S.$2.80.

Exchange control based on regulations in force in the United Kingdom.
Most United Kingdom goods may be imported under open general license. All other imports are subject to import license.
Export licenses are required in a few cases.

CZECHOSLOVAKIA

At the end of 1950 the official quotations for the United States dollar were:

Buying:	Czechoslovakian Crowns	49.85
Selling:	" "	50.15

In general, sales and purchases of foreign exchange and payments to be made abroad are subject to license of the Ministry of Foreign Trade when the settlement of goods is concerned; for other transactions the license is issued by Statni Banka Ceskoslovenska. No forward operations are permitted on behalf of non-residents.

Bank accounts in the name of non-residents in foreign exchange may be opened and carried without formality. Balances are usable according to the restrictions of the country involved or within the regulations mutually agreed upon. For dollar accounts there are no restrictions. Non-resident individual accounts carried in local currency require license for all entries. For banks, however, debits and

credits may be freely passed if the items concern banks located in the same foreign country. Payments from such bank accounts to residents in Czechoslovakia and the country of residence of the account owner are freely made, but remittances to other countries from such bank accounts are subject to license. Likewise, a license is required to credit such account of a bank if the remittance originates from an account of a resident of a country other than that in which the owner of such account is located.

Exports and imports require special licenses. An import license includes authority to acquire foreign exchange under conditions stipulated in the license and authority to effect payment abroad without further formalities. It is advisable for American exporters to have financial transactions confirmed through Statni Banka Ceskoslovenska with a view to assuring themselves that the particular matter before them is in accordance with the current regulations. In case of need the American exporter is at liberty to approach that institution to obtain information in doubtful cases. We are advised that this service is rendered without charge.

Visitors to the country may carry travel instruments in foreign currency without restriction. However, local currency, including coins, may not be carried into the country by the traveler in amounts exceeding Kcs. 500 in denominations of not more than Kcs. 50. All such holdings must be declared upon entry, and the document used for this purpose must be certified by the Customs Officer. This formality is very important as the certificate serves as record of sales of foreign exchange to be entered thereon by an authorized bank. The document is inspected by Customs when the traveler leaves the country, and the funds recorded as having been spent must be in proportion to the costs of living during the stay and of proved purchases of merchandise. Amounts confirmed as having been imported, less adequate expenses, may be re-exported by virtue of the above certificate within 3 months. After expiration of such period a special license is required. The export of local currency upon departure is restricted to Kcs. 500 as above. Selling of exchange in other than official markets is strictly forbidden.

DENMARK

At the end of 1950 the official selling rate for the United States dollar was Kroner 6.92 to U.S.$1.

Dealings in foreign exchange with foreign banks may take place only after a special permission has been obtained from Danmarks Nationalbank, and consequently Danish banks have no authority to convert one foreign currency into another. Danish banks may, however, sell Danish kroner to foreign banks against United States dollars or Swiss francs; they may also sell Danish kroner to countries with which Denmark has concluded monetary agreements against the currency of the country in which the foreign bank in question is situated. Forward operations in foreign currencies may only be executed after obtaining permission from Danmarks Nationalbank. However, the Danish banks may contract forward operations with their domestic clients, provided this takes place in connection with

the importation and exportation of goods to and from Denmark.

Accounts in Danish kroner for foreign banks may be opened without approval of the Authorities. Accounts in Danish kroner for persons and firms living abroad may be opened by Danish banks only with permission from Danmarks Nationalbank. Bank accounts in favor of non-residents may be divided in the following categories:

Account No. 1 - Broadly speaking, this category comprises all current accounts carried for foreign banks. These accounts may be used for current payments between Denmark and the foreign country in question, with the exception of the investment of capital which calls for permission from Danmarks Nationalbank.

Account No. 2 - These accounts may only be opened through transfers from an Account No. 1 belonging to a bank of the same nationality, and transfers back to such an Account No. 1 may be made. These accounts may be used for current payments in Denmark and only for account of the country in question.

Account No. 3 - This category comprises all accounts in favor of foreign insurance companies opened with a view to regulate reinsurance payments. Transfers between any two such accounts may take place irrespective of nationality. Transfers from an Account No. 3 to an Account No. 1 belonging to a bank of the same nationality may also take place.

Account No. 4 - To these accounts are credited amounts which may not be transferred to the foreign country in question without permission from Danmarks Nationalbank. Such accounts may, therefore, be carried for banks and insurance companies as well as for other companies and individuals. Generally, one may expect permission from Danmarks Nationalbank to invest such balances in Danish bonds payable only in Danish kroner. The balance of an account carried for individuals or firms in the United States may be used to defray expenses incurred by the owner of the account during his stay in the country. Benevolent payments may be made for his personal account, and he is also able to make payments from his account for the maintenance of insurances effected in Denmark.

As a rule interest and dividends may be transferred to the foreign country in which the owner of the bonds or shares in question is resident. Interest and dividends provisionally credited to an Account No. 4 may as a rule be transferred within 3 months of the passing of the credit entry. For transfer at a

later date the sanction of the Danmarks Nationalbank will be required. Should the owner be a Danish subject, transfer can only take place if he is permanently resident abroad and has not been permanently resident in Denmark since April 9, 1940.

The proceeds of all drawn Government and Municipal bonds, and also of drawn Credit Association and Hypothek-Association bonds, may as a rule be transferred to the foreign country in which the owner is permanently resident. Should the owner be a Danish subject, transfer can only take place if he is permanently resident abroad and has not been permanently resident in Denmark since April 9, 1940.

Proceeds from the sale of securities, real estate, etc., belonging to non-residents of Denmark will be credited to an Account No. 4 in the name of the owner, and in ordinary cases it will not be possible to have these balances transferred to the foreign country in question. If, however, proof is submitted to the Danmarks Nationalbank to the effect that the owner is without means or income, the Danmarks Nationalbank may permit the transfer of small amounts for living expenses. As a rule the transfer of inherited money will be permitted for amounts up to Kr. 25.000.

When residents of Denmark immigrate, they are as a rule permitted to take with them only a small amount in United States dollars. Later requests for remittances will be dealt with by the Danmarks Nationalbank and each case decided on its merits.

Royalties due to authors of books and the like may be transferred, and payments for services are also normally transferrable.

Royalties in connection with the manufacture of goods, rent of foreign machinery and profit emanating from the manufacture of goods for foreign account, as well as royalty in connection with motion pictures, may only be transferred with the sanction of the Directorate of Supplies.

Proceeds of goods which have been legally imported into Denmark may be transferred to foreign countries according to the agreements concluded with the individual countries. As far as the United States is concerned, such transfers may take place in dollars. Generally, one may expect permission to pay prewar commercial debts.

Most imports and exports require permission from the Directorate of Supplies. When goods which call for import license, as well as those which do not, are customs cleared, an exchange permit is issued, which entitles the importer to demand the foreign exchange in question. The issuance of an import license or Exchange Control approval does not carry with it an undertaking on the part of the Authorities to allocate the necessary exchange at settlement date.

With respect to United States dollar documentary collections, the banks are allowed to receive payment for such collections only in case the importer is in

possession of a valid import license which under ordinary circumstances means that the bank is in position to transfer the amount to the United States. In case of non-payment of a documentary collection and if the relative goods have not cleared Customs, it is unlikely there would be any difficulty in arranging for transshipment after payment of storage charges, etc. A considerable quantity of merchandise imported into Denmark is financed through documentary collections, as well as bankers commercial credits. The importer may open commercial credits when in possession of a valid import license. Imports must reach the port of destination before the expiration of the time limit stipulated in the import license as extension of the license cannot be expected in all cases.

Foreign cash may be imported without limit by travelers along with Danish bank notes and coins up to Kr. 100. The traveler may also bring in checks, travelers checks, letters of credit, bills, etc., issued in Danish kroner or foreign currency without limit. The same amount of kroner as mentioned above can be exported by the traveler when leaving the country, and in addition he may carry with him foreign cash, provided he brought it in with him or proves through entries in his passport that the exchange was legally purchased.

FINLAND

The official selling rate for the United States dollar at the end of 1950 was Finmarks 231 to U.S.$1.

All dealings in foreign exchange are subject to the approval of Finlands Bank.

IMPORTS

Foreign exchange for the importation of goods may be granted and payment permitted only to the extent of and on those conditions which may be assumed from the valid import license issued by the Authorities. While such import licenses are granted for the period corresponding to delivery terms according to contract, in case of need and on request the Authorities can authorize an extension. It is customary for the import license to state the nature and quantity of the goods, as well as the amount of foreign exchange involved for payment thereof, calculated at the FOB value in the foreign port of shipment. Authorized banks are permitted to grant foreign exchange for settlement of freight, insurance and other necessary charges beyond the amount provided for in the license and which have been incurred in direct connection with the delivery of the goods.

NON-RESIDENT ACCOUNTS

Accounts in finmarks may be carried by Finnish banks for non-residents. Described below are the three categories of accounts available to non-residents.

Exchange Mark Accounts - This type of account may receive credit for the counter-value of foreign exchange, insurance and reinsurance premiums and transfers from an account of the same type the owner of which is domiciled in the same country. Any other credit entry must have the approval of Finlands Bank. Debits may

be freely passed for payments within the country, but conversions into foreign currencies require permission of Finlands Bank.

Inland Mark Accounts - Prior to January 16, 1950, these were known as Blocked Accounts. Credits to such accounts are passed only with approval of Finlands Bank. Balances may be freely disposed of in Finland for purchase of bonds and shares, gifts, taxes and living and travel maintenance within the country. Transfers may be made from this type account to others in the same category regardless of the country of domicile of the owner. However, permit of Finlands Bank is necessary for transfers to Exchange Mark Accounts or Travel Mark Accounts. Checks may not be drawn, it being required that written or telegraphic instructions be directed to the bank involved giving the reason for the payment.

Travel Mark Accounts - Only foreign banks and bankers may maintain this type of account. Such accounts may be credited with the counter-value of Finnish notes and coins purchased from travelers from Finland. Balances in these accounts are transferable to accounts of similar type irrespective of domicile of the owner of the account. Travel marks may be freely disposed of by checks, travelers letters of credit or payment orders for travel and maintenance costs in Finland. However, this refers only to travelers domiciled abroad traveling to Finland and having foreign nationality.

BLOCKED ASSETS

With the exception of bank accounts, all other assets and property in Finland belonging to persons domiciled abroad (accounts and claims with private persons and firms, securities and other property which are held in the safe custody of a bank) are called Blocked Assets. Finnish banks on the instructions of their clients may realize for reinvestment property which is held in safe custody by them, as well as effect such reinvestments without the permission of Finlands Bank.

If the object of the realization is to provide funds for the crediting of an account, the permission of Finlands Bank should previously be obtained. The yield of Blocked Assets held in the safe custody of a bank may be credited to an Inland Mark Account.

In all other respects Finlands Bank shall determine in every individual case

regarding the utilization of Blocked Assets.

TRAVEL

Travelers may bring into the country and take with them when departing Finnish notes and coin up to a maximum of Finmarks 20,000. For children under sixteen years of age this limit is Finmarks 10,000. There is no restriction as to denomination. Any foreign means of payment may be brought into the country by a traveler. A non-resident traveler may also bring in checks issued by foreign banks for payment by Finnish banks in finmarks, travelers checks and travelers letters of credit. Non-resident travelers on leaving the country may, without special permission and within 3 months from the date of arrival, take out only that amount in Finnish currency and foreign means of payment which was carried upon entry. The traveler should be able to prove to the Customs by means of a bank receipt that the foreign currency used in the country has been sold to an authorized bank.

FRANCE

At the end of 1950 the United States dollar was quoted at Francs 349.80.

The United States dollar is dealt in exclusively on the free exchange market as are the Belgian franc, the Canadian dollar, the Djibouti franc, the Portuguese escudo and the Swiss franc. All other foreign currencies are traded in on the official market within selling and buying rates fixed by the Banque de France, which rates are adjusted, when necessary in order to keep the parities of these currencies in line with the United States dollar. Present parities are based on the dollar at Frs. 350.

Rates on the free exchange market are determined by the law of supply and demand, although because purchases are still subject to license, it cannot be said that this is a free market in the strict sense of the term.

The free market is fed by the foreign currency proceeds of exports, freight, transportation costs, insurance, port charges invoiced in United States dollars or other currencies quoted on the free market, as well as by the amount of such currencies derived from any other sources, including sales of foreign currency by tourists and movement of capital into France.

Escudos, Belgian, Djibouti and Swiss francs, and Canadian and United States dollars finding their way to the free market are available for the payment of the invoice value of imports for which import licenses have been issued, as well as for the payment of freight, transportation costs, insurance and port charges relating to such imports and in general for all duly authorized transfers of funds out of France. The same rule applies to the official market for currencies traded on that market.

As stated above, all purchases for merchandise imports or transfer of funds are subject to license. Except in extremely rare instances, it is unlikely that licenses will be issued for capital exports.

When exchanging escudos, Belgian, Djibouti and Swiss francs, and Canadian and United States dollars, the banks impose the following commission charges:

2 o/00 for the first Frs. 10,000,000 or equivalent thereof,
1 o/00 between Frs. 10 and 20,000,000 or equivalent thereof, and
3/4 o/00 on amounts over Frs. 20,000,000 or equivalent thereof.

These charges are reduced as follows for transactions on the official market:

1 1/4 o/00 for the first Frs. 10,000,000 or equivalent thereof,
1 o/00 between Frs. 10 and 20,000,000 or equivalent thereof, and
1/2 o/00 on amounts over Frs. 20,000,000 or equivalent thereof.

The currencies of the French Franc Currency Area are at present being exchanged against the Continental franc on the following basis:

AT PAR

Algeria, French Guiana, Guadeloupe, Martinique, Monaco, Morocco and Tunisia

Fr.C.F.A. (French Colonies in Africa)
1 Fr.C.F.A. = Frs. 2

French West Africa, French Equitorial Africa, Madagascar, Reunion Island, French Mandates in the Cameroons and Togo, Saint Pierre et Miquelon

Fr.C.F.P. (French Colonies in the Pacific)
1 Fr.C.F.P. = Frs. 5.50

New Caledonia, New Hebrides, Etablissements Francais de l'Oceanie

1 Piastre = Frs. 17

Indochina

1 French Rupee = Frs. 73.50

Etablissements Francais de l'Inde

(Syria and Lebanon no longer constitute part of the French Franc Currency Area. The Saar is now included in this area.)

French Somaliland enjoys full liberty as to exchange operations, and the Djibouti franc is freely convertible into United States dollars at Djibouti on the basis of Djibouti Francs 214.392 to the dollar. The Djibouti franc is dealt in on the free exchange market in Paris and the movement of funds from the French Franc Currency Area to French Somaliland is subject to the same

regulations as are transfers to foreign countries.

The following operations are subject to the prior authorization of the French Office des Changes:

1) The export of goods from the French Franc Currency Area, as well as the export of gold, bank notes, checks, travelers checks, letters of credit, credit instruments, securities, titles to properties, etc.

2) The execution of foreign exchange operations in foreign countries by French nationals residing in France.

Foreign exchange operations must be executed through an "approved bank" (une banque agreee).

All residents of France are authorized to deal in gold, including its transportation within the French Franc Currency Area, but imports and exports of gold are prohibited.

Special import licenses may be obtained only on condition that the gold be simultaneously sold to the Banque de France against French francs. The purchasing price of gold by the Banque de France is at present $35 per ounce, dollar proceeds being exchanged against francs at the prevailing rate of the dollar on the free exchange market, but the proceeds of sale of gold cannot be exported.

Non-residents may upon justification obtain permission to export gold which they owned prior to September 9, 1939.

Foreigners residing in France are free to dispose of their assets abroad, but are specifically prohibited from transacting, directly or indirectly, any operation which, in violation of the exchange regulations, would facilitate the acquisition, sale or disposition by a resident of French nationality of any assets in francs or foreign currency, whether located in France or abroad.

Residents of France (foreigners as well as French nationals) must repatriate within 1 month after due date all foreign currency exchange derived from the export of goods or other sources of income from abroad. The full amount must be sold through an approved bank at free market rates in the case of currencies quoted on that market and at the official market rates for other foreign currencies.

TRANSFERS OF FUNDS FROM THE FRENCH FRANC CURRENCY AREA TO THE UNITED STATES

Upon proper justification the Office des Changes may authorize residents to transfer funds to persons or companies in the United States, if such transfers cover normal and current payments and do not represent the export of capital. If the authorization specifies that the transfer is to be effected in dollars, payment will be made in that currency in the United States. On the other hand,

if the authorization specifies French francs, these will be credited to a Free Franc Account (Compte Francs Libres) in France.

Payments or transfers of funds covering the following are considered as normal by the Office des Changes:

1) Imports of merchandise into the French Franc Currency Area.

2) Port services, warehousing, customs duties and other charges attached to the movement of merchandise.

3) Charges and profits derived from the transportation business.

4) Commissions, brokerage, publicity and representation expenses.

5) Installation expenses, repairs, work on a commission basis and similar services.

6) Insurance and reinsurance premiums and indemnities.

7) Expenses attached to freight or passenger transportation by land, sea or air by one country on behalf of another.

8) Wages, salaries and fees, social security contributions and indemnities, pensions and other income derived from a regular employment contract or having the character of a governmental obligation.

9) Royalties, manufacturing patents and authors' rights or moving-picture film rentals.

10) Taxes, fines and court expenses.

11) Periodical settlements by postal, telegraph and telephone administration as well as public transportation.

12) Travel expenses, research, hospitalization, subsistence and relief.

13) Maintenance expenses of diplomatic and consular posts and other official missions.

14) Proceeds of interest and dividends, mortgage interest, interest from real estate securities, rents, operating profits of commercial enterprises and income from life annuities as well as other periodic income.

15) Proceeds of contractual debt redemptions and the reimbursement of short-term credits covering the financing of commercial or industrial operations.

16) Proceeds of the liquidation or sale of investments made after August 31, 1949, in the French Franc Currency Area (Indochina excepted) by residents of the United States (see under "INVESTMENTS MADE IN THE FRENCH FRANC CURRENCY AREA BY RESIDENTS OF THE UNITED STATES").

17) All other payments which by their nature can be classified in one of the categories mentioned above.

The usual supporting documentation for such categories of payments must be submitted to the Office des Changes with each application for authorization to transfer funds, and the Office des Changes reserves unto itself complete freedom of action in passing upon the adequacy of the justification presented.

Transfers to the United States will be executed either by free market purchases of United States dollars or by crediting a franc account classified as a Free Franc Account (Compte Francs Libres) (see below for details concerning these accounts).

ACCOUNTS AVAILABLE TO RESIDENTS OF THE UNITED STATES

A. Franc Accounts

1) Free Franc Accounts (Comptes Francs Libres)

2) Internal Accounts in the name of non-residents (Comptes I.N.R.)

3) Suspense Accounts (Comptes d'Attente)

4) Capital Accounts (Comptes Capital)

B. Foreign Currency Accounts

FRANC ACCOUNTS

Free Franc Accounts (Comptes Francs Libres)

All residents of the United States are permitted to open Free Franc Accounts (Comptes Francs Libres). Such accounts can be opened in any part of the French Franc Currency Area except Indochina, Etablissements Francais de l'Inde, Etablissements Francais de l'Oceanie, New Caledonia and New Hebrides.

The following operations can freely pass over such accounts:

CREDITS

1) Proceeds of the sale of dollars on the free market.

2) Transfers from other Free Franc Accounts.

DEBITS

1) Transfers to other Free Franc Accounts or to Franc Foreign Accounts (Comptes Etranger en Francs).

2) All payments in France.

3) Conversion into United States dollars at free market rate.

Internal Accounts in the name of Non-Residents (I.N.R.)

Subject to the prior authorization of the Office des Changes, such accounts may be opened on the books of approved banks in the name of:

1) French civil servants or military personnel stationed abroad, as well as French personnel of French firms abroad.

2) Persons who previously resided in the French Franc Currency Area and whose residence abroad is not of a permanent nature.

3) Persons habitually residing abroad, whose residence in the French Franc Currency Area is temporary, as well as foreign services or organizations temporarily established in the French Franc Currency Area.

The owner of the account must undertake in writing to use the account exclusively for his personal needs, not to sell the credit balances in the account to individuals or companies residing abroad and finally not to use the funds standing to the credit of the account to effect payments for account of non-residents.

Once the account is opened it may be utilized only for collections and payments within the French Franc Currency Area. Balances in such an account cannot be transferred abroad nor can they be converted into foreign currency, but otherwise they may be as freely used as balances in internal French franc accounts in the name of residents.

The following operations can pass over such accounts:

CREDITS

1) Funds derived from the sale of foreign currencies to the Stabilization Fund.

2) Funds transferred from a foreign account.

3) Collection of all income of whatever nature derived within the limits of the French Franc Currency Area.

4) Deposits made by the paymasters of allied military administrations in favor of nationals, organizations or agencies of these administrations in service abroad and temporarily assigned to France.

5) Collection of coupons, proceeds of redeemed bonds deposited in a I.N.R. custodian account and settlement of securities transactions as indicated under the heading SECURITIES.

DEBITS

1) Payments of living expenses in France and/or of expenses relative to the administration of the assets of the owner and his family in France.

2) Payments of expenses incurred by foreign services or organizations temporarily established in France (when the account has been opened in their name).

Suspense Accounts (Comptes d'Attente)

These accounts may be opened in French francs in the name of non-resident owners. Deposits therein may be effected without the authorization of the Office des Changes. They may be used exclusively for the purchase of or subscription to French securities (see under SECURITIES).

Capital Accounts

A new category of account, entitled Capital Account, was established in late 1949 to facilitate the handling, negotiation and utilization in France of old foreign-owned assets which have been and still are non-transferable abroad.

Capital Accounts can be opened individually in the name of a non-resident person or company or globally in the name of a non-resident foreign bank. It should be noted, however, that the opening of Capital Accounts in favor of persons of French nationality require prior approval of the Office des Changes. As a consequence, funds owned by such persons cannot be credited to an account in the name of a non-resident foreign bank under the global arrangement mentioned above.

CREDITS

(The geographical classification of the account credited must correspond to the country of residence of the person for whose account the transaction is effected.)

Funds derived from any one or more of the following sources can be credited

without permission of the Office des Changes to a Capital Account, provided the geographical classification of the relative account corresponds to the country of residence of the owner:

1) The proceeds of the sale of French securities on a stock exchange in France (the securities sold must be either withdrawn from a foreign depot identified geographically with the country of residence of the owner or imported from such a country. In the latter instance the securities imported must be accompanied by a certificate of ownership which will furnish the basis for placing them in a depot in the proper geographic category).

2) The proceeds of the reimbursement of French securities under a contractual agreement. The securities must fulfill the conditions mentioned in 1 above. (This privilege is of interest only if the owner for some reason does not avail himself of the opportunity to receive francs which can be transferred abroad).

3) The proceeds of anticipated retirement of French securities, provided such securities fulfill the conditions described under 1 above.

4) The proceeds of the sale of real estate or real estate rights located in France, the sale to be transacted through the intermediary of a French notary.

   The real estate or real estate rights must be in the name of a non-resident of foreign nationality or a non-resident of French nationality owning an individual Capital Account and the ownership must either have predated September 10, 1939, or have been acquired subsequent to that date, either through inheritance or as a result of rights in existence prior to September 10, 1939, or as a result of a transaction or act entered into after September 10, 1939, with the approval of the Office des Changes.

   Furthermore, the purchaser of the real estate rights must be either a resident of France or a non-resident of foreign nationality residing in the same country as the seller, or a non-resident of French nationality owning an individual Capital Account identified geographically with the country of residence of the seller.

   It is also necessary that the funds representing the proceeds of the sale be paid into the account by the French notary whose services were utilized in effecting

the sale. The latter is entrusted with the responsibility of issuing a certificate showing the name, address and nationality of both purchaser and seller, as well as the location of the property sold, and the sale price mentioned in the contract.

5) Funds derived from a Capital Account in the same geographic category as the account to be credited, whether or not the payment involves a transfer of title.

All other transactions or any transaction mentioned above not meeting all the conditions stipulated are subject to a special license issued by the Office des Changes.

DEBITS

(The geographical classification of the account debited must correspond to the country of residence of the person for whose account the transaction is effected.)

1) Purchase of French securities on a stock exchange in France.

2) Subscription to capital increases of French companies whose shares are quoted on a stock exchange.

3) Purchase through the intermediary of a French notary of real estate or real estate rights located in France.

The seller must be either a resident of France or a non-resident of foreign nationality residing in the same country as the purchaser, or a non-resident of French nationality owning an individual Capital Account identified geographically with the country of residence of the purchaser.

It is also necessary that the funds withdrawn from the account to purchase the real estate be paid to the French notary whose services as intermediary have been utilized in closing the real estate deal. The notary is entrusted with the responsibility of issuing a certificate showing the name, address and nationality of both purchaser and seller, as well as the location of the property purchased, and the price mentioned in the contract of sale.

4) Payment of the following expenses:

a) Safe custody charges and commissions concerned with securities deposited in a foreign depot of the same geographic classification as the

Capital Account to be debited.

b) Maintenance expenses and repairs, real estate taxes and insurance concerned with real estate meeting the conditions stipulated under 4 of CREDITS. Proper justification for such disbursements must be furnished.

5) Extension of French franc loans to resident persons or companies under the following conditions:

a) The letter exchanged between the borrower and the lender must stipulate that at the time of reimbursement the funds will be paid direct by the borrower to the intermediary on whose books the account is carried.

b) The loan agreement must stipulate the rate of interest (maximum 1½% above the central bank rate); duration of loan (maximum 3 years); amount of the loan (max. Frs. 10,000,000); penalties designed to protect the lender in case of the failure of the debtor to meet his obligation; the nature of the mortgage guarantees, if any, and other clauses resulting therefrom and identity of person or persons, company or companies guaranteeing reimbursement.

c) In spite of the fact that it is obligatory to credit the proceeds of reimbursement of advances to the Capital Account originally debited, a special license from the Office des Changes is required before the reimbursement can be effected.

d) The amount of interest due can be either paid into a Franc Foreign Account in the same geographic category as the Capital Account originally debited, or paid into the Capital Account debited at the time the loan was made.

6) Withdrawals from Capital Accounts in names of individuals to finance the expenses of the relative individuals and their families during their sojourn in France. For the purpose of this regulation members of the family are defined as husband or wife and their direct ascendants or descendants and the amounts so withdrawn are limited to Frs. 10,000 per person, per day, with a maximum of Frs. 500,000 per month for any one family during its sojourn in France. Withdrawals from

Capital Accounts in the name of banks and companies to finance the living expenses of individuals of foreign nationality during their sojourn in France within the limits set forth above and provided the individuals be residents of the same country as the owner of the account.

7) Transfers to another Capital Account in the same geographic category as the account debited, whether or not the transfer involves change of ownership of the funds so transferred.

All other operations, or operations mentioned above but not fulfilling all stipulated conditions, are subject to the prior approval of the Office des Changes.

It should be mentioned that French securities (other than short-term bonds) purchased under the conditions stipulated under 1 and 2 above can be placed in a foreign depot corresponding to the geographic classification of the Capital Account debited for the purchase.

Short-term bonds must be placed in a Capital depot in the same geographic classification as the account debited for the purchase.

The proceeds of coupons collected, as well as the proceeds of the sale or retirement (contractual or anticipated) of the securities above-mentioned, must be paid into a Capital Account of the same geographic classification as the Capital Account originally debited at the time of the purchase.

(On two occasions, namely, on August 3 and October 9, 1950, Office des Changes authorized the transfer of balances standing to the credit of Capital Accounts to regular accounts of same nationality (Free Franc Accounts for the United States).

FOREIGN CURRENCY ACCOUNTS

With the exception of banks, Foreign Currency Accounts may be freely opened in favor of foreigners not residing in France. The operations which can pass over these accounts without necessity of applying for Office des Changes' permission are as follows:

CREDITS

1) Transfers in foreign currency effected by a non-resident in favor of the owner of the account.

2) Proceeds of the collection of checks and/or travelers checks payable at the counters of a bank abroad and remitted by the owner of the account.

DEBITS

1) Sales against francs on the French market through an approved bank.

2) Transfers abroad in favor of the owner of the account, the transfers to be made in the currency of the account.

SECURITIES

The proceeds of coupons or of securities (amortized or redeemed) remitted to France from the United States for collection, may with the permission of the Office des Changes be credited to a Free Franc Account (Compte Francs Libres). However, in order to furnish the Office des Changes with justification in support of the application for approval, the foreign remitting bank should enclose with the coupons and/or securities an ownership certificate signed by it to certify that the coupons and/or securities are the property of a person not residing in France or an enemy country. If the owner is of French nationality, the ownership certificate should include the date of his last departure from French soil and the circumstances under which the coupons and/or securities were acquired by him. The Office des Changes is inclined to withhold non-residential status from French nationals who left France since 1940 and who they feel might be only temporarily abroad.

The lodgment of securities in a non-resident depot requires permission from the Office des Changes (except when lodged in a "suspense depot"). However, securities may be lodged in a non-resident depot without permission of the Office des Changes under certain conditions, such as securities which were purchased with funds derived from the sale of United States dollars.

Letters from abroad containing French or foreign bank notes, securities, coupons, etc., should be addressed to an approved bank in France. Prior authorization is required to dispatch letters from France to a foreign country when these contain bank notes, securities, credit instruments, orders of disposition abroad or powers of attorney authorizing disposition of foreign assets belonging to French nationals residing in France.

TRAVELERS

There is no limitation as to the amount of French franc notes and/or French Colonial franc notes which may be taken into France by travelers who, however, cannot take out more than Frs. 50,000 per person. Amounts in excess of this limit must be left in the custody of the customs collector at the point of exit against a receipt issued to the traveler. The owner may repossess such notes upon his return to France or he may, if he desires, appoint a mandatory. In the latter event he must authorize the Customs in writing to pay his mandatory. When the deposit with the Customs has been recorded in the name of a non-resident, repayment is subject to the prior approval of the Office des Changes.

Limitations are imposed as to the amount of foreign currencies and denominations

which travelers coming from certain countries are allowed to import and to negotiate in France, but United States dollars may be imported from any country without limitation as to either amount or denomination.

Travelers upon entering French territory may be requested by the Customs Office to declare orally all foreign moneys, travelers checks, checks, letters of credit and other credit instruments in their possession. Such declarations are not recorded in the travelers' passports.

Travelers are under obligation not to dispose of foreign exchange when in France by any means other than through approved channels. When leaving French territory, travelers may be requested by the Customs Office to make an oral declaration of the credit instruments in their possession and to confirm that the instruments represent the unused portion of what was actually imported when coming into the country.

Leading hotels have been delegated authority to negotiate travelers checks and foreign bank notes. Travelers checks may also be used to pay for certain personal purchases effected by non-residents when on a trip to France. Such purchases, provided they are paid for in dollars and taken out of the country with the luggage of the travelers, are considered by the French Authorities as "invisible exports" and as such are exempted from interior taxes amounting to 13½%. The sellers are expected to pass on the benefits of such exemptions in the form of a rebate to the purchasers.

It is not possible for non-residents of France to purchase foreign currency bank notes or checks without prior approval of the Exchange Authorities.

EXPORTS

A large number of French products may be exported without licenses but only against the exporter's undertaking, termed an Engagement de Change, to repatriate the foreign currency proceeds of the merchandise sold abroad. This must be done within 1 month after due date.

The Engagement de Change requires the approval of the Office des Changes before the goods may be exported. The Office des Changes control is concerned with prices, currency and terms of payment. Exports to the United States are invoiced in United States dollars or in francs (payable through a Free Franc Account).

IMPORTS

Imports from the United States are effected within limits fixed as to quantity and nature of the goods. This is done under a general import plan through:

1) Groupements d'importation.

2) Private firms or individuals.

All imports are subject to import licenses issued by the Service Central des Licences and approved by the Office des Changes. The licenses are valid for 6 months and automatically entitle the beneficiary to acquire the necessary foreign exchange from the approved bank (with whom the import has been domiciled for control purposes, the bank being selected by the importer) or to transfer to the credit of a Foreign Account the franc amount required to pay for the import if invoiced in French francs. The transfers must be effected only on due date fixed by the commercial contract.

Should the importer feel that the execution of an order placed abroad is likely to require more time than is provided by the import license, which has a maximum validity of 6 months, he should apply for a prior authorization ("Autorisation préalable").

The prior authorization is a guarantee that the regular import license will be granted in due course.

INVESTMENTS MADE IN THE FRENCH FRANC CURRENCY AREA (INDOCHINA EXCEPTED) BY RESIDENTS OF THE UNITED STATES

Office des Changes authorize the transfer abroad of the proceeds of the liquidation or sale of investments made after August 31, 1949, in the French Franc Currency Area (Indochina excepted) by individuals or companies residing in the United States, provided the investments have been:

1) effected in conformity with French exchange regulations, more particularly in those cases where investments require prior approval of the French Authorities (see explanatory note below as to operations having to do with investments, whether or not requiring prior approval),

2) made under one of the following forms:

   a) subscription to French securities or to capital shares of French companies; subscription made either at the time of the constitution of the company or at the time of subsequent increase of capital;

   b) purchase in the French Franc Currency Area of French securities inclusive of short-term bonds and short-term bills;

   c) acquisition from a French resident of real estate and/or of real estate rights and/or of commercial business situated on the French Franc Currency Area;

d) French francs and/or dollar loans granted to residents on condition that the interest rate stipulated be in line with those normally applied on the French market for the type of operation under consideration,

3) made with either United States dollars sold on the free market or with French francs derived from a Free Franc Account or both, and

4) recorded with an approved bank ("Intermediaire Agréé"), the latter to report to Office des Changes within 10 days. Subsequent amendments likely to alter the character of the investment are to be also recorded and reported as above.

The transfer abroad will be authorized, provided there has been no change in the ownership and upon justification that the conditions stipulated above have been respected. Transfer will have to be effected in the currency used at the time the investment was made.

INVESTMENT TRANSACTIONS NOT REQUIRING PRIOR APPROVAL

1) Purchase on the stock exchange of French securities officially listed.

Subscription to the same type of securities.

2) Sale on the stock exchange of French securities acquired under the conditions enumerated under general heading INVESTMENTS MADE IN THE FRENCH FRANC CURRENCY AREA (INDOCHINA EXCEPTED) BY RESIDENTS OF THE UNITED STATES.

INVESTMENT TRANSACTIONS REQUIRING PRIOR APPROVAL

1) Purchase of French securities not listed officially.

2) Purchase of capital participations in French companies.

3) Subscription to French securities not listed officially. Subscriptions entered at the time of the formation of a French company consequently require prior approval. Office des Changes' decision is notified, after consultation with the Commission Interministerielle des Investissements when importance of the deal justifies such consultation.

4) Subscription to capital participations in French companies by other means than through the purchase on the

stock exchange or subscription to French securities officially listed.

5) Purchase of real estate, real estate rights or of the good will of French enterprises.

6) Granting of loans.

7) More generally, all operations other than those listed under 1 and 2 in preceeding paragraph.

GERMANY, WESTERN

At the end of 1950 the official exchange rate was Deutsche Marks 4.20 to U.S.$1.

Purchase and sale of foreign exchange other than dollars is handled on the basis of exchange rates fixed by Bank Deutscher Laender. Forward exchange operations are permitted in certain currencies, including United States dollars, for duly licensed imports up to a term of 3 months. Extensions for a similar period may be granted.

Accounts in foreign currencies are not permitted for banks and individuals resident abroad, but banks in the United States may carry so-called Remittance Accounts in Deutsche marks, through which certain payments may be made but not for commodity and service transactions. In general, accounts in the name of non-resident individuals and firms are blocked and may be carried only in local currency. However, following the pattern of restrictions governing the operation of blocked accounts, certain debits and credits may be passed without special permission, although the opening of the account requires approval of Bank Deutscher Laender. Information as to whether a specific transaction is eligible for entry over such blocked accounts will be furnished on request.

The income or proceeds from the redemption of securities may not be transferred; the funds instead are blocked. Similar status is accorded the proceeds from the sale of securities, real estate or other capital assets.

The question of disposition of prewar debts is still subject to further study, but certain payments relating thereto are eligible for credit to blocked accounts. Balances in accounts of persons emigrating from Germany to the United States are blocked as in the case of all other foreigners. Inheritances may be credited to blocked accounts without approval. Remittance abroad of any funds covering royalties are subject to special licenses. Subject to submission of justification and eventual approval of the Authorities, remittances may be made in foreign exchange. These include payments in cover of advertising expenses (advertisements in newspapers, periodicals, films, posters and radio), participation in trade fairs, court expenses, membership in foreign economic organizations, machine repairs, transportation, insurance premiums and agents commissions.

Imports and exports are subject to license. In the case of imports the issuance of the import license warrants the allocation of exchange needed to pay for the goods. Commercial credits may not be opened on a date earlier than 60 days before the expected shipment of the merchandise.

Payment of collections is made on the strength of import licenses which must be presented in each case. It is important that the license be issued prior to the conclusion of the transaction or contract since the importer, when applying for the license, must give his assurance that the transaction is to take place subsequent to the date of issuance of the license. In case of need goods may be transshipped without payment of duty.

Non-resident travelers holding an entry permit may bring into the country foreign currency and travel funds, including German travel funds, without limitation but may carry local currency in notes and coin of a value up to only Deutsche Marks 40. These holdings must be declared and when leaving the country, the traveler may take out funds so recorded, including the same amount of German notes and coin if desired.

GIBRALTAR

The legal currency is that of the United Kingdom.
Exchange control is based on regulations in force in the United Kingdom.
Import licenses are required for few United Kingdom goods, but merchandise from outside the Scheduled Territories is subject to license.

GREAT BRITAIN (See United Kingdom)

GREECE

At the end of 1950 the official rate for the United States dollar (including the Foreign Exchange Certificate described below) was:

Drachmai 15,000 to U.S.$1.

Exchange transactions in Greece are under the control of Bank of Greece. The commercial banks are authorized to deal in foreign exchange at official rates under regulations issued by Bank of Greece. No forward transactions are allowed at the present time.

Accounts may be opened in the name of foreign residents without official approval when the relative drachmai amount is derived from conversion of foreign exchange. Withdrawals are subject to license by Bank of Greece. The transfer abroad of income or the proceeds from the redemption or sale of securities and the sale of other capital assets are also subject to license.

Imports and exports are subject to licenses. The issuance of an import license

usually carries with it an undertaking on the part of the Authorities to allocate the relative foreign exchange on settlement date.

Sellers of foreign exchange to banks, i.e., exporters of goods from Greece, beneficiaries of payment orders from abroad and others, are granted in payment, in addition to the drachmai equivalent at the official rate of exchange, Foreign Exchange Certificates issued in amounts equal to the foreign exchange sold, thus obtaining a total local currency amount of about Dr. 15,000 for one U.S.$1 at the end of 1950. Foreign Exchange Certificates issued in United States dollars are valid for a period of 60 days from the date of issue and are negotiable at the stock exchange in Athens. Importers are required to buy these Certificates for an equal amount at the prevailing price in the market, in addition to the amount of foreign exchange needed to pay for the relative importation at the official rate of exchange. While the official rate has not been changed, the Government, following the devaluation of the pound sterling, decided to realign the drachma, and the rate for the dollar expressed above gives effect to an increase in the price of the Foreign Exchange Certificate. Basic commodities imported by the Government are exempt from this plan.

Imports into Greece can be paid for by documentary letters of credit. In order to open such credits, the Greek importer must deliver to one of the authorized banks the relative import license together with a pro-forma invoice visaed by the Chamber of Commerce of the importer's district. These same formalities are required for payment of documents sent for collection to a Greek bank. Greek exporters must repatriate the foreign exchange proceeds of their sales abroad.

When entering Greece, a traveler may carry with him Drachmai 20,000 in that currency. United States dollar currency, travelers checks and travelers letters of credit issued in dollars or other foreign currency may be taken into the country without limitation but must be declared at the point of entry. These instruments may be freely taken out when leaving Greece, but the traveler must produce an authorized bank's certificate evidencing the amounts used while in Greece.

ICELAND

At the end of 1950 the official rates for the United States dollar were:

Buying: Kronur 16.26
Selling: Kronur 16.32

The sale of foreign exchange by the banks, except certain payments on behalf of the State, the Municipalities and the banks, are subject to license by the Economic Board. The Landsbanki Islands and the Utvegsbanki Islands have the exclusive right to buy and sell foreign exchange. Residents must repatriate all foreign exchange which they may acquire. It must be delivered to one of the above-mentioned banks for conversion at the official rate. Transfer of income from foreign-owned assets and of property the value of which is expressed in kronur is subject to license from the Trade Committee. The export and import of securities is subject to approval of Landsbanki Islands.

The Economic Board issues combined exchange and import licenses for imports, but for all other payments separate exchange licenses are issued. Importers and others concerned are not permitted to enter into contracts with non-residents without license from the Board. Licenses are issued for certain periods but normally may be renewed in case of need. Issuance of an exchange license does not carry with it an undertaking on the part of the banks to allocate the exchange at settlement date. In case the banks are unable to supply the exchange, a special Interbank Committee decides the order in which the exchange licenses shall be honored by the banks.

Bankers commercial credits play an important part in the financing of imports, especially in trade with the United States. A commercial credit cannot be opened unless the importer has the necessary exchange and import license, if such license is required for the commodity involved. On the other hand, some commodities are on the free list requiring neither exchange nor import license, but the general rule that exchange cover must be secured before the goods are shipped is also applicable to goods on the free list.

Accounts of non-residents which are credited with the proceeds of foreign exchange sold to either of the above banks may be freely debited for payments to residents. Balances may also be converted into the currency of the country of residence of the account owner without exchange license. Payments from residents to the credit of accounts of non-residents are subject to license issued by the Economic Board.

The export and import of Icelandic bank notes is forbidden, but foreign travelers may bring foreign exchange into the country without limitation. Upon departing, they may take out the unused amounts in foreign currency if declared on entry.

IRELAND

At the end of 1950 the official rate for the United States dollar was Irish £1 to U.S.$2.80.

Dealings in foreign exchange are under control of the Government Authorities and the regulations are on lines parallel with those in force in the United Kingdom. No person may buy, sell, lend or borrow gold or foreign exchange without the sanction of the Minister for Finance.

Non-residents (persons outside the Scheduled Territories) may open accounts only with the approval of the Minister for Finance who indicates the status of the account on the relative application, that is, whether Free Foreign Account or Blocked Foreign Account. This depends normally on the type of value received. For example, the equivalent of a United States dollar draft would be authorized for lodgment in a Free Foreign Account. Likewise available for such an account is sterling transferred from an account holder of the same residential status. Transfers out of Free Foreign Accounts may be freely made to residents of the Scheduled Territories or to the country of residence of the account holder in

either Irish currency, sterling or foreign currency (United States dollars for American residents). Normally the Minister for Finance will not permit a Free Foreign Account to be overdrawn.

The opening of a Blocked Foreign Account is subject to approval of the Minister for Finance. Without reference to the Minister a bank may permit payment of funds from a blocked account for maintenance of the account holder and his family for any period of their stay in Ireland. All other payments require official approval. The Minister for Finance is prepared to consider applications for permission to invest blocked funds in Irish Government securities or securities guaranteed by the Irish Government, provided the securities are not subject to redemption by periodic drawings or otherwise within 10 years. Where securities have been purchased from blocked moneys with his permission, the Minister will ordinarily be prepared to allow interest to be lodged in a Free Foreign Account, but an application (Form E4) must first be submitted. The Minister is also prepared to consider applications to use blocked funds for care and maintenance of property in Ireland owned by the account holder. Transfers outside the Scheduled Territories from blocked accounts will only be permitted in exceptional circumstances, that is, for living expense of the account holder who is shown to be in needy circumstances.

Where one party of a joint account is resident within the Scheduled Territories and the other party is resident outside that area, the account is regarded as an Irish account (resident account). Credit entries are permissible, but debits require the Minister's approval. If the Irish resident's name is withdrawn from the account, application is made on Form E4 for future designation of the account.

Irish nationals emigrating to the United States are permitted to take up to £250 with them on departure and to receive 3 subsequent annual transfers not exceeding £250 each year. After this 4 year period only income arising out of any further assets remaining in the country may be remitted to the United States.

Likewise permission is given freely to transfer income on their securities in Ireland to other non-residents. In general, proceeds from the redemption of securities may be transferred where this can be done without disturbing the balance of payments position of the country. Generally speaking, transfers of capital (sale of securities, real estate or other capital assets) belonging to non-residents are not permitted, and such funds are normally approved for lodgment in a Blocked Foreign Account. However, when proved to be genuinely required for maintenance, the transfer of the proceeds or part thereof is approved.

Transfer abroad of bona fide current profits of subsidiaries and affiliates of American companies arising out of business activity is normally permitted on verification of the profit figures.

Permission is given freely for the remittance of royalties under old established agreements. Proposals for new agreements are in general sanctioned if benefits will accrue to the country's economy. However, agreements involving payments

relating to non-essential goods will not necessarily be approved.

Inheritances from persons who at the time of decease resided in Ireland are normally permitted to be transferred abroad to the beneficiaries, provided the estates are realized within a reasonable time.

Permission is normally given for the transfer abroad of funds covering payment for services, such as those incidental to the transport of goods for which foreign exchange facilities have been approved, for the processing, finishing and repair of goods abroad, for technical assistance rendered abroad and for commissions, brokerage and advertising.

In general, imports are subject to license, but whether or not an import license is required from a State Department, permission must be obtained from the Department of Finance before orders may be placed for goods originating outside the Scheduled Territories. The permission must be a specific one to be secured in connection with each transaction or a general permission relating to particular classes of goods from specified countries. Issuance of an import license does not imply that the necessary Exchange Control approval to effect payment will be made available by the Department of Finance. Import licenses, where necessary, are normally issued by the Department of Industry and Commerce if the goods are of an industrial nature, and by the Department of Agriculture if the goods are agricultural in character. Merchandise not paid for may be re-exported without penalty unless entered for Customs or placed in bonded warehouse in which case a license, usually freely issued, must be obtained.

Travelers are not legally restricted as to the amount of Irish currency notes they may bring with them upon entering Ireland, but if a large amount of such notes is carried, the traveler is liable to questioning, possibly intensively, by the Customs because of the ban on the exportation of Irish notes beyond a limit of £5. United States dollar currency and travel instruments of payment may be brought in without limit. These holdings do not have to be declared, but if the traveler desires to take out a portion of them when departing, the full amount of currency holdings should be declared. This forms the basis for approval to export the currency when he does leave the country.

ITALY

The official rate of exchange is fixed daily by the Italian Foreign Exchange Bureau (Ufficio Italiano dei Cambi - Cambital). At the end of 1950 this rate was Lit. 624.81 to U.S.$1.

Firms and individuals of Italian nationality domiciled in Italy must surrender to the Italian Foreign Exchange Bureau (Ufficio Italiano dei Cambi - Cambital) through an authorized bank such foreign currencies as they may acquire, including foreign bank notes (gold and silver excluded). However, exporters and other beneficiaries of remittances in United States dollars are allowed to keep 50% of the exchange. The remaining 50% must be surrendered to Cambital. That retained is credited to a special account and may be utilized by the owner within 60 days,

counting from the first day of the month following the date of credit, for payment of imports or for travel expenses of Italian citizens going abroad, the latter subject to approval of Cambital. If the beneficiary is unable to utilize the exchange, it may be sold to a bank or to an importer, and the sale is executed at the so-called export rate which is quoted daily on Italian stock exchanges on the basis of actual transactions. The foreign exchange thus acquired by the importer cannot be resold by him and if not used within the 60 day term, it must be surrendered to Cambital at the official rate with a 20% discount as penalty. The official rate is fixed daily by Cambital and corresponds to the average of the closing export rates on the Milan and Rome exchanges on the same day. Forward operations are available only in currencies involved in the transactions mentioned above whereby 50% is sold at the export rate but these are infrequent. There are no forward operations at the official rate. A commission of 6/10 of 1% is payable to Cambital on surrender of dollars at the official rate.

The transfer abroad of income from Italian subsidiaries or affiliates of American companies, as well as any other foreign-owned asset, is subject to approval of the Exchange Control Authorities. (For the treatment of income on investments from funds in Accounts - Ministerial Decree No. 211 of March 2, 1948 see below). Balances belonging to former residents of Italy who have emigrated to the United States are not transferable. Persons in this category are considered as foreigners, and the status of their accounts upon leaving the country and taking up residence in the United States is changed to so-called Foreign Accounts, subject to regulations applicable to these accounts as described below. Transfer abroad of royalties, funds representing payment for services and inheritances are also subject to approval of the Exchange Control Authorities.

CURRENT ACCOUNTS

The main classification of accounts in the name of non-residents are Foreign Accounts (Conti Esteri), Accounts-Ministerial Decree No. 211 of March 2, 1948 (Conti D.L. 2/3/48 N. 211) and Free Accounts in Free Currency (Conti Liberi in Valuta Libera). The Ordinary Non-transferable Accounts (Conti Intrasferibili Ordinari), the Special Non-transferable Accounts-Funds Constituted in Advance (Conti Intrasferabili Speciali-Fondi Precostituiti) and other accounts of minor importance have been united in one category denominated Foreign Accounts (Conti Esteri), grouped according to country of residence of the banks, firms and individuals in whose name the accounts are carried. Foreign Accounts - Northern America are those in the name of residents of Alaska, Canada, Canal Zone, Guam, Hawaiian Islands, Mexico, Midway Islands, Oceania Possessions, Panama, Puerto Rico, Sandwich Islands, Samoa Islands, the United States and Virgin Islands. Foreign Accounts may be credited with:

1) interest accrued on sums credited to the account,

2) lire funds representing income from real estate or from securities, investments or the proceeds from their sale, as well as sums standing under any title to the owner of the account except as otherwise governed by current

Exchange Control Regulations or International Agreements,

3) remittances in free-transferable currency (United States dollars or Swiss francs) or, subject to specific authorization by Cambital, in other currencies or with transfers through clearing, or

4) only as regards accounts of Authorized Foreign Banks held with Authorized Italian Banks (Bank of Italy, Agents and Aggregate Banks) with transfers from other Foreign Accounts in the name of owners residing in the same country or group of countries where the foreign bank is established.

Transactions described in paragraphs 1) and 3) require no authorization of Cambital.

Concerning the credits mentioned in paragraph 2), authorization is not required for the crediting of income from securities or of the proceeds from the sale of securities of a Securities Foreign Account with the same Italian bank in the name of the same owner; in other cases the authorization is required when the transaction exceeds Lit. 100,000.

Foreign Accounts may be utilized for investment in securities and real estate under certain conditions which require the approval of Cambital only when the amount exceeds Lit. 5,000,000 monthly. There is no limitation for Italian Government securities. Balances may also be used by banks for tourist checks issued to travelers going to Italy and for emigrant remittances. Additionally, balances in Foreign Accounts may be used for donations, gifts, etc., and for living expenses of the owner while in Italy, as well as like expenses for members of his family or the owners and officials of the firms in whose name the account is carried up to Lit. 300,000 per calendar month for each beneficiary. Moreover, payments may be made from such accounts for a maximum of Lit. 300,000 against submission to the Italian bank of documentary evidence on behalf of the owner for such items as taxes and similar expenses, interest on loans to permanent Italian residents, premiums payable to insurance companies for contracts in lire, judiciary expenses, indemnities for damages, professional fees, wages and salaries, magazines, periodicals, etc., and purchases for non-commercial purposes of books published in Italy. Transfers from Foreign Accounts and from Foreign Securities Accounts in the name of individuals and firms may be made in favor of an Authorized Foreign Bank, provided the bank is established in the same country or group of countries in which the owner of the account resides. Such transfers are also allowed from the accounts in the name of a foreign bank in favor of another bank, provided the two banks are established in the same country or group of countries. Foreign banks are allowed to utilize their Foreign Accounts and Foreign Securities Accounts for the above-mentioned purposes for the benefit of their customers residing in the country or group of countries where they are established. Balances in Foreign Accounts, however, may not be used to pay for merchandise to be exported from Italy.

Accounts - Ministerial Decree No. 211 of March 2, 1948 (Conti D.L. 2/3/48 N.211)

These accounts may be fed with the lire proceeds of free currencies (United States dollars or Swiss francs) remitted to Italy for investment purposes and they may be freely used for investments in the account owner's name.

Income from investments may be transferred abroad at a maximum rate of 1% above the legal interest rate which at present is 5%. The re-export of capital invested in Italy is permitted for the same amount of foreign exchange originally imported. Transfer abroad of 50% of such capital is allowed after the first 2 years and the balance after the second period of 2 years.

Free Accounts in Free Currency (Conti Liberi in Valuta Libera)

These accounts may be fed only with legitimate remittances from abroad in free currencies (United States dollars or Swiss francs). Balances may be used freely in Italy and transferred abroad without prior approval of Cambital. (Free Accounts in Free Lire have been abolished.)

SECURITIES ACCOUNTS

The main classification of securities accounts in the name of residents abroad are the following:

Securities Foreign Accounts (Depositi Esteri)

The Untransferable Ordinary Securities Accounts (Depositi Intrasferibili Ordinari) and other securities accounts of minor importance have been united into one category denominated Securities Foreign Accounts (Depositi Esteri) and classified according to the foreign country or group of foreign countries of residence of the owner irrespective of the latter's nationality.

The following are eligible for transfer to these accounts:

1) Securities purchased with funds available in Foreign Accounts pertaining to the same owner in the name of which the securities are registered or with funds supplied by a bank of the same country or group of countries as that of the owner of the account.

2) Securities originating from other Securities Foreign Accounts when the beneficiary is a foreign bank established in the same country or group of countries as that of the owner of the Securities Foreign Account from which the securities originate.

3) Securities originating from a Securities Foreign Account held by an Authorized Foreign Bank with an Authorized Italian Bank when the beneficiary is an individual or a firm residing in the same country or

group of countries as that of the bank requesting the transfer.

4) Securities authorized to circulate abroad duly remitted from abroad through the Bank of Italy, or an agent bank, to an Authorized Italian Bank.

5) Securities of other unspecified origin.

While Italian banks may lodge securities directly under paragraphs 1), 2) and 3), prior authorization of Cambital is necessary for depositing them under paragraphs 4) and 5). In case of the sale of securities from such accounts, banks are authorized to effect the sale directly, provided that the proceeds thereof are utilized as indicated above for funds in Foreign Accounts.

Securities Accounts - Ministerial Decree No. 211 of March 2, 1948 (Depositi D.L. 2/3/48 N.211)

Securities purchased with balances in Accounts - Ministerial Decree No. 211 of March 2, 1948 (Conti D.L. 2/3/48 N.211) may be deposited in such accounts.

Securities held in such accounts may be exported abroad or sold in Italy; in the last case proceeds from the sales are to be credited to an Account - Ministerial Decree No. 211 of March 2, 1948 (Conto D.L. 2/3/48 N.211).

Free Foreign Securities Accounts in Free Currency (Depositi Liberi di Titoli Esteri in Valuta Libera)

United States dollar and Swiss franc securities issued abroad, coming from abroad or from another such account, may be deposited in a Free Foreign Securities Account in Free Currency. These securities may be freely transferred for any operation to be effected abroad (cashing of coupons, etc.). Foreign exchange proceeds deriving from the income or from the sale of such securities abroad may be freely utilized abroad or credited in a Free Account in Free Currency (Conto Libero in Valuta Libera).

IMPORTS

An import license issued by the Ministry of Commerce is required before certain goods can be shipped into the country, but some others may be imported with direct authorization of the Customs Authorities upon presentation of a bank confirmation with responsibility to settle against funds in a Foreign Exchange Export and Remittances Account (United States dollars for shipments from the United States). Whether or not an import license is required, payment for the goods is effected in foreign exchange purchased in the market at the export rate and no exchange permit from Cambital is required. If a license is required in connection with the import of a particular commodity, it is advisable for the importer to secure such license before placing his order so as to effect the shipment of the goods into the country without difficulty. Temporary imports, as well as the re-exportation of imported goods, is permitted but duties paid

thereon are not refundable.

American travelers entering Italy may freely carry with them Italian bank notes but only in denominations not exceeding Lit. 1000. The traveler may carry into the country any amount of foreign currency in bank notes or checks in addition to checks or letters of credit which might be issued in accordance with clearing agreements with Italy. Upon entry, all currency holdings must be declared on a special form stamped by the Customs Authorities. This document permits the traveler to re-export the foreign currency brought in or any balance not used during his sojourn in the country. Travelers may freely negotiate United States dollar bank notes, bankers checks, travelers checks and letters of credit, 50% at the export rate and 50% at the official rate. Upon leaving the country, travelers may carry with them Italian bank notes up to a maximum of Lit. 30,000 in denominations not exceeding Lit. 1000.

LIECHTENSTEIN, PRINCIPALITY OF

The Swiss franc is the legal currency in the Principality of Liechtenstein, where the Swiss regulations are applicable in their entirety.

MALTA

Local £ = U.S.$2.80.

Exchange control is based on regulations in force in the United Kingdom. Import and export licensing regulations based on the United Kingdom system; at present very few goods are available for export. Import licenses are required for all goods.

MONACO (See France)

NETHERLANDS, THE

At the end of 1950 the official rates for the United States dollar were:

Buying: Florins 3.79½
Selling: Florins 3.80½

Exchange transactions are under control of Nederlandsche Bank N.V. Forward exchange operations with non-residents are not permitted.

American Accounts are new accounts carried in the name of American banks for which no permit is required for opening or crediting the following:

1) Proceeds of the sale of United States dollars.

2) Income or the proceeds of contractual redemptions of Dutch securities held by United States citizens.

3) Amounts originating from duly licensed imports from the United States.

4) Transfers from other American Accounts or from T Accounts in the name of individuals resident in the United States.

5) Interest on bank accounts.

The following debits may be passed without license:

1) Conversion into United States dollars.

2) All payments in The Netherlands.

3) Transfer to other American Accounts.

For individuals in the United States, local currency accounts are divided into four categories known as T (transferable), K (non-transferable), N (non-transferable for persons of Dutch nationality) and Z (enemy property, etc.) Accounts. Further information regarding these accounts will be furnished upon request.

Prewar commercial debts owed to residents of the United States are remittable only under special license, the application for which is considered on its merits. This is also true in the case of royalties, payment for services and inheritancies. Balances of emigrants to the United States are transferred to an N Account and then to a K Account when he becomes a citizen.

Income or the proceeds of contractual redemptions of Dutch securities held by a citizen of the United States can be transferred or credited to an American Account or a T Account of a resident of the United States without permit of Nederlandsche Bank N.V. Income of subsidiaries or affiliates of American companies can also be transferred; however, if above 10% per annum a special permit from Nederlandsche Bank N.V. is required.

Sales of non-exportable Dutch securities by non-residents are permitted only with the proviso that the proceeds be reinvested within 6 exchange-days in other Dutch securities, only the proceeds of so-called internationally negotiable shares being permitted to be reinvested in securities of this category. Permission will be granted to non-residents for the retransfer of the proceeds of the sale or liquidation of share capital invested in an industrial enterprise established in and exercising its main function in The Netherlands, provided:

1) the participation has been effected in the form of shares;

2) these shares have been acquired by virtue of an investment license granted after November 1, 1950;

3) the payment of these shares has been effected by means of transfer from abroad or to the debit of a transferable credit balance (American Account or T Account), and

4) at least 3 years have elapsed since paying for the shares.

The amount that is considered for retransfer is the net proceeds in case of the sale of the shares or upon liquidation of the undertaking, unless the said proceeds should exceed the sum total of the value of the shares based on the price of issue and the portion, allocated to these shares, of the reserves created by the profits, in which case the said sum only is considered for retransfer.

If the amount to be retransferred should be in excess of Fls. 5.000.000, it may be prescribed that the retransfer be apportioned over 3 consecutive years with a minimum of Fls. 5.000.000 per annum.

Imports and exports are subject to license by The Netherlands Foreign Exchange Control. At present most imports from the United States are financed under the European Recovery Program. When filing application for an import license, the importer has to produce a pro-forma invoice. If circumstances justify the granting of a permit and the import will be financed under the Marshall Plan by means of the reimbursement procedure, the relative government bureau delivers a so-called "binding promise" to the importer. This implies the production by the importer of four copies of the contract between importer and exporter. After verification of this contract, the relative government agency grants the import and foreign exchange license in duplicate, one copy for Customs on arrival of the goods and the other for the authorized bank to serve as authority to make payment to the supplier, provided all further documents required for reimbursement by the Economic Cooperation Administration are likewise available.

Exporters are required to sell to Nederlandsche Bank N.V. 90% of the proceeds of their exports to Canada and the United States. The balance of 10% is at their free disposal to purchase goods in the United States and in other countries or to defray hotel and travel expenses incurred abroad.

The importation of Dutch bank notes in excess of Florins 100 and the exportation in excess of Florins 100 (in denominations smaller than Florins 100) are prohibited. Non-residents and members of their families traveling in the country are permitted to use their T Accounts without limitation and of their K and N Accounts up to Florins 60 per person, per day, during their stay. There are

no restrictions on the amounts American banks may pay to such travelers either by dollar checks or to the debit of their American Accounts. Non-resident travelers are permitted to bring into the country unlimited amounts of foreign currency in travelers checks, letters of credit, checks and bank notes but these holdings must be declared at the point of entry in order to be able to re-export them or the unused balance on leaving the country.

NORWAY

At the end of 1950 the official rates for the United States dollar were:

Buying: Kroner 7.13½
Selling: Kroner 7.15

Exchange transactions are under the control and supervision of Norges Bank.

The opening of bank accounts in favor of non-residents is subject to the approval of Norges Bank, unless the initial deposit is derived from United States dollars or a United States bankers check in Norwegian kroner. In principle, debits and credits over non-resident accounts must bear the prior approval of Norges Bank, but under the payment agreement between Norway and the United States certain types of transactions can be executed without the necessity of seeking such approval.

Income or the proceeds from the redemption of securities held for foreign account may be used in full or part payment of new securities but are transferable out of the country only with permission of Norges Bank. The sale of securities by a non-resident is also subject to approval of Norges Bank. Proceeds of the sale of securities, real estate and other capital assets are credited to a blocked account and transfer abroad is subject to license. However, funds derived from the sale of securities may be used for the purchase of new securities as in the case of proceeds of redeemed securities.

Royalties are transferable abroad subject to the contract having been signed prior to April 9, 1940, and the amount does not exceed Kroner 5,000.

Inheritances in favor of persons resident in the United States are transferable against certificate issued by the Probate Court involved showing the amount inherited, the maximum being Kroner 10,000 or its equivalent.

Payments for services in connection with the import or export of goods are usually transferable. This ruling also applies to patent fees and taxes and duties due the United States Government.

Transfers of funds belonging to emigrants to the United States are subject to license, each case being considered on its merits.

All imports with the exception of private moderate gifts require licenses. Issuance of an import license does not grant an importer the right to acquire the

dollar exchange needed to pay for the goods to be shipped from the United States. The import license must be submitted by the importer with his claim for United States dollars to the Exchange Allocation Committee through his bankers when desiring to pay for goods by means of a commercial credit or otherwise. However, there is at present no delay in obtaining allocations of the exchange. Exports are also subject to license by the Norwegian Ministry of Commerce.

Travelers may take Norwegian bank notes into Norway in an amount not exceeding Kroner 50 per person. Dollar letters of credit, travelers checks and other foreign means of payment may be carried without limit, but they should be declared upon entering the country to avoid difficulty in carrying out unused portions when leaving.

PORTUGAL

At the end of 1950 the official rates for the United States dollar were:

Buying: Escudos 28.60
Selling: Escudos 28.90½

Dealings in foreign exchange are regulated and supervised by Banco de Portugal. Forward dealings are not completed by Banco de Portugal, but other banks can handle this type of business. In general, however, it is limited to sales which are made at a rate slightly higher than the rate for spot transactions. Commercial banks may freely sell foreign currencies not exceeding the equivalent of Esc. 2,500, provided the purchaser engages in writing to furnish Banco de Portugal documentary proof, if later required, of the purpose for which the exchange is to be used.

All sales of foreign exchange for payment of imports are subject to the presentation of an import registration bulletin. Imports and exports must be registered with the Corporate Technical Council and the so-called bulletin of registration is prepared in multiple form so as to provide copies for

1) Customs,

2) Banco de Portugal,

3) the Corporate Technical Council, and

4) the exporter or importer involved.

Upon presenting a copy of the bulletin of registration approved by the Authorities to any banker authorized to sell exchange, an importer may acquire the foreign currency specified in the document. The funds so acquired must be used solely for the payment of the respective goods.

Accounts may be opened in favor of non-residents in both escudos and foreign currency. In general, debits to such accounts require the approval of the Exchange

Authorities. However, transfers among accounts of the same country may be effected freely. Balances representing proceeds of the sale of United States dollars and Swiss francs may be operated freely.

Transfer abroad of the proceeds from the sale or redemption of securities is also subject to approval of Banco de Portugal. Documentary collections are payable at the rate of exchange prevailing at the time of presentation, and the drawee must present the collecting bank with the relative bulletin of registration. Goods may be re-exported if licensed by the Ministry of Economy. Portuguese exporters are required to sell the foreign currency proceeds of their exports to their bankers.

Travelers entering the country may carry with them any amount in escudos, and there is no limit to the amount of foreign currency that may be brought in. Foreign currency holdings may be declared upon entry and upon leaving the country. Foreign currency in bank notes may be sold freely in amounts up to the equivalent of Esc. 1,000; for sales in excess of that amount it is necessary to have authorization of the Exchange Authorities. This is easily obtainable if the currencies are United States dollars or Swiss francs.

SPAIN

The official basic buying rate for the United States dollar at the end of 1950 was Pesetas 10.95. However, the rate in the so-called free exchange market in Madrid was approximately Pesetas 40 to U.S.$1.

Through the medium of a multiple exchange rate system there are in addition special rates in force for certain imports and exports. These rates are fixed by Instituto Espanol de Moneda Extranjera which controls exchange transactions and the rates are published in an official bulletin.

By decree of July 21, 1950, the Government announced the establishment of the above referred to free exchange market, effective August 1, 1950. Transactions are handled through the official and the private Spanish banks. The regulations provide for the sale of foreign exchange from sources, such as:

1) A certain percentage of the proceeds from the sale of Spanish goods abroad as specifically authorized in the relative Spanish export license.

2) Funds paid by a foreign company or person for harbor and airport charges, storage expense, dock expense, Spanish transport services (land, sea and air), commission, brokerage and representatives' expenses and funds expended for manufacture, refinement, repairs, etc., for foreign account.

3) Capital transferred from abroad into Spain, including repatriated Spanish capital, funds invested by Spanish

subjects domiciled abroad or that invested by foreigners with approval of Instituto Espanol de Moneda Extranjera, funds of tourists for travel and living expenses and living expenses of foreigners domiciled in Spain, income from foreign capital and labor, including that from patents and authorship rights, payments for family support or benevolent payments, pensions, etc., insurance, premiums, rents, damages, etc.

4) Foreign exchange from other sources, provided approved by Instituto Espanol de Moneda Extranjera.

The currencies presently eligible for trading in the free market in the form of checks, transfers or deposits, are:

United States dollars	Moroccan francs
Dollars in German account	Swiss francs
Dollars in Cuban account	Belgian francs
Dollars in Greek account	Escudos
Dollars in Italian account	Florins
Pounds sterling	Swedish crowns
French francs	Danish crowns

Owing to certain regulations with respect to export and import of bank notes in various countries, trading until further notice will be limited to bank notes of the following currencies:

United States dollars	Belgian francs
Swiss francs	Escudos

Purchases of exchange in the free market, which are subject to the prior approval of Instituto, may be made in general for the following purposes: duly licensed imports, expenses for foreign travel, payments to persons abroad of funds derived from income in Spain on capital, remittances for family aid, certain transportation expenses, repairs to Spanish property abroad, fees due brokers or representatives abroad, insurance premiums, Spanish capital to be invested abroad subject to official approval and any other remittances for which approval is granted by the Ministry of Commerce and the Instituto.

As regards the special rates prevailing for imports and exports, it is understood that these rates are applicable only to the sales or purchases of foreign exchange effected by importers or exporters in Spain in connection with transactions there. It is further understood that Spanish exporters of merchandise to the United States continue to invoice in dollars.

The Instituto Espanol de Moneda Extranjera publishes only buying rates. However, for sales of United States dollars it adds Pesetas .27 to the particular rate involved to cover its commission on the transaction.

All import and export transactions are subject to license by the Ministry of

Industry and Commerce. All applications for import licenses, after being approved by the Ministry of Industry and Commerce, are sent by that body to the Instituto Espanol de Moneda Extranjera. The license will be definitely issued to the importer by the Instituto at the time it has the relative exchange available. The period of validity of the license begins on that date. In certain instances authorization to open commercial credits may be obtained from the Control.

The accounts of non-residents with banks operating in Spain are subject to Decree 313 which stipulates that all entries over such accounts must bear the prior approval of the Exchange Control. However, non-residents are permitted to maintain so-called Free Accounts which can be credited only with the peseta proceeds from the sale of free foreign currencies and can be debited without the approval of the Authorities for all payments within Spain, with the exception of those which represent settlement of exports.

Income from foreign-owned property, as well as the proceeds from the redemption of foreign-owned securities, must be credited to an account in the name of the owner, such account being subject to Decree 313. This means that disposition for any purpose is subject to the prior approval of the Exchange Control. The same applies to the proceeds from the sale of foreign-owned capital assets.

Non-residents visiting Spain are permitted to take United States currency into the country without limitation, but they are expected to declare the amount and details on a printed form issued to them by the Customs Authorities for that purpose. Upon leaving Spain, each traveler will be permitted to take out the amount brought in, less expenditures during his stay, which must be indicated on the form given to him at the time of his entry. Up to Pesetas 10,000 may be brought into the country in bank notes by a traveler, but when leaving he may carry out only Pesetas 2,000.

SWEDEN

The official exchange rates for the United States dollar at the end of 1950 were:

Buying: Kronor 5.17
Selling: Kronor 5.18

Exchange transactions are under the control of Sveriges Riksbank which has authorized certain of the Swedish banks to deal in foreign exchange within the terms of existing regulations. Forward operations are permitted in United States dollars and pounds sterling.

Approved Swedish banks are authorized to carry the following categories of accounts for non-residents.

Regular Accounts - These are accounts the balances in which under former regulations were considered freely transferable. Such accounts in favor of residents of the United States can be credited without the prior approval of the Exchange

Authorities with funds derived from:

1) Another Regular Account in the name of a United States resident.

2) Swedish kronor checks drawn to the order of a United States resident by the Sveriges Riksbank or another Swedish bank authorized by them to deal in foreign exchange.

3) The equivalent of dollars supplied by a United States resident for replenishment of the account.

4) Payment by a resident of Sweden for Swedish account to a resident of the United States in settlement of imports from the United States or certain other specified transactions in limited amounts.

These accounts can be debited without prior approval for transfers to another Regular Account of a United States resident, payments in Sweden representing expenses connected with the administration of the Swedish property of a United States resident or payments to a Swedish resident relating to certain specified transactions, including reasonable travel and living expenses. Under certain conditions this type of account may also be debited for payment of exports and for the purchase of Swedish bonds.

Limited Accounts - These are accounts the balances in which were not freely transferable under the previous regulations. The prior approval of the Exchange Authorities must be obtained for all credits to such accounts. Debits for a few specified purposes are permitted without the necessity of obtaining such prior approval.

Blocked Accounts - These accounts as a rule may be credited without the approval of the Exchange Authorities, but all debits are subject to license.

In principle, the sale of foreign-owned securities and the transfer to the United States of the proceeds of such securities, foreign-owned real estate or other capital assets is prohibited and exceptions are made only for weighty reasons. The transfer of the proceeds of redeemed securities is also subject to approval of the Exchange Office, but permission is normally granted on production of an affidavit of ownership and residence. Income from securities is normally transferable, provided such affidavit can be produced. Income of subsidiaries or affiliates of American companies may be transferred to the United States only with the approval of the Exchange Office, each case to be determined on its merits.

Remittances to the United States in dollars covering prewar debts are also subject to approval in each specific case. This is also true with respect to balances of emigrants from Sweden to the United States, but those who took up residence in the United States prior to January 1, 1944, are in a more favorable position.

Royalties, inheritances and payments for services are also subject to approval, but applications for the foreign exchange to be remitted abroad are normally approved.

Exchange covering imports from the United States is allocated without a special permission in each case of duly licensed imports or when the merchandise appears in the Swedish free import list (Books form an exception when the total value exceeds Kr. 500 and then require special permission of the Exchange Office). However, the transfer of advance payments is subject to special permission when the amount involved exceeds Kr. 2000 or in the case of machines one-third of the invoice value.

Exports are also subject to license, unless the particular commodity appears in the free export list which is extensive. When exporting goods on the free list, the exporter must give a written guarantee that payment according to contract will be made within 6 months from date of exportation. Swedish exporters must surrender to the Sveriges Riksbank the proceeds of their sales abroad, if received in United States dollars, Swiss francs or Argentine paper pesos.

A traveler may freely carry any funds into the country, except that in the case of Swedish currency the limit he may import is Kr. 100 in denominations of Kr. 50 or smaller. Such holdings must be declared upon entry, and the declaration serves as a license, valid for 3 months, for their export when leaving the country.

SWITZERLAND

At the end of 1950 the free rate of exchange was Swiss Franc 1 to U.S.$0.2334.

There are no restrictions on dealings in foreign exchange, including those involving forward contracts and none with respect to assets of residents of the United States. Bank accounts in the name of residents and non-residents of the United States may be opened and operated freely without sanction of the Swiss authorities.

Exports require no license, but for imports there are varying degrees of control with respect to agricultural products.

UNITED KINGDOM (ALSO CHANNEL ISLANDS AND ISLE OF MAN)

At the end of 1950 the exchange rates fixed by the British Control for the United States dollar were $2.79 7/8 - $2.80 1/8.

The Exchange Control Act 1947 continues, with necessary alterations, the control system brought into being in 1939. The United Kingdom grouped with the Dominions, Colonies and certain overseas countries were originally designated the sterling area but are now known as the Scheduled Territories.

The main controls provide for

a) sale to the Control of gold and specified currencies held by residents,

b) dealings in foreign exchange and gold to be concentrated in authorized channels,

c) classification of sterling accounts,

d) control over transactions involving non-residents and borrowings by resident corporations which are controlled by non-residents and over borrowings guaranteed by non-residents; control of new capital investment in the United Kingdom by non-residents,

e) supervision over commercial transactions, travel and emigrants, and

f) control over the issue and transfer of securities where non-residents are concerned and control over foreign and bearer securities.

Specified or requisitioned currencies (a) are those which must be offered by residents for sale to the British Treasury through an Authorized Bank and include the following:

Argentine paper pesos
Belgian francs
Brazilian cruzeiros
Canadian dollars
Congolese francs
Francs of Metropolitan France
Francs of French Somaliland (Djibouti francs)
Indochinese piastres
Lebanese pounds
Luxembourg francs
Guilders of The Netherlands, Surinam and The Netherlands Antilles
Panamanian dollars
Philippine pesos
Pondicherry rupees
Portuguese escudos
Swiss francs
Syrian pounds
United States dollars
Uruguayan pesos

Sales of exchange (b) are normally made to residents for legitimate trade requirements, such as payments for approved imports, freights, agents' commissions, royalties, insurance treaties, premiums and claims and income from investments,

including profits on companies controlled or partially controlled abroad, etc.

Forward exchange transactions are permitted covering firm commercial contracts involving a movement of goods.

American and other non-residents who are going to be domiciled in Great Britain and Northern Ireland for a period extending over 5 years are granted exemption upon application from (a) in respect of their own currencies, but not as regards other specified currencies which are subject to normal regulations affecting residents of the United Kingdom.

Sterling accounts are classified (c) according to the residential status of the beneficial owner and are grouped by the Exchange Control as follows:

1) Scheduled Territories (Sterling Area)
The United Kingdom and the Dominions (except Canada which includes Newfoundland), the other countries in the British Empire, the British Mandated Territories of Cameroons, Nauru, New Guinea, South-West Africa, Tanganyika, Togoland and Western Samoa, the British Protectorates and Protected States, Burma, Eire, Hashemite Kingdom of the Jordan, Iceland and Iraq.

These accounts are available for payments anywhere within the Scheduled Territories, but not outside them, without official approval.

2) American Account Countries (Dollar Area)
The United States of America and any territory under its sovereignty, Bolivia, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, Philippines and Venezuela.

Transfers between the countries of the American group are allowed as are also payments to the Other Countries group and to the Transferable Account group. Transfers from these groups to the American group are not allowed except with prior permission from the Bank of England.

3) Transferable Account Countries
Anglo-Egyptian Sudan, Austria*, Chile, Czechoslovakia, Denmark (including the Faroe Islands and Greenland), Egypt (including Palestine), Ethiopia, Finland, Greece*, Iran, Italy (excluding the Vatican City - but comprising The Republic of Italy, Italian Somaliland, The Republic of San Marino and The Free Territory of Trieste), The Netherlands Monetary Area (that is to say, The Netherlands, Indonesia and The Netherlands West Indies), Norway, Poland, Spanish Monetary Area (that is to say, the Peninsular territories of the Spanish State, the Balearic and

Canary Islands, Ceuta and Melilla, the Spanish Zone of Morocco and the Spanish Colonies), Sweden, Thailand, and the Union of Soviet Socialist Republics.

The purpose of Transferable Accounts is to widen the extent of the availability of sterling as between different countries in respect of current transactions. Direct transfers may be made freely, therefore, between Transferable Accounts irrespective of country. Such accounts are generally confined to banks, and the financial agreements between the United Kingdom and the respective Transferable Account countries provide for the monetary authority or Exchange Control of the particular country concerned to exercise supervision of the operations passing through Transferable Accounts in order to ensure that these relate to current transactions only.

*Effective as of January 19, 1951.

4) Bilateral Countries

Argentina, Belgian Monetary Area (that is to say, Belgium, Luxembourg, Belgian Congo and the Mandated Territory of Ruanda Urundi), Brazil, Bulgaria, Canada which includes Newfoundland, French Monetary Area (that is to say, Metropolitan France including Algeria and Corsica, Monaco, French West Africa, French Equatorial Africa, Madagascar and its dependencies, La Reunion, French Guiana, Martinique, Guadeloupe, Saint-Pierre et Miquelon, French India, Viet Nam, Laos and Cambodia, New Caledonia, French Oceania, New Hebrides Condominium, Morocco and Tunisia, Togo and Cameroon which are territories under Trusteeship and Saar Territory), French Somaliland, the Western Zones of Germany (including the American, British and French Sectors of Berlin), Hashemite Kingdom of the Jordan, Hungary, Israel, Japan, Lebanon, Paraguay, Peru, the Portuguese Monetary Area (that is to say, Portugal and the adjacent islands, Cape Verde Islands, Gulf of Guinea, Angola, Mozambique, Portuguese Guinea and Goa), Rumania, Switzerland and Liechtenstein, Syria, Tangier, Turkey, Uruguay, Vatican City and Yugoslavia.

The setting up of these accounts arises from agreements made between the United Kingdom and the Governments of those countries enumerated in this group, and payments are restricted to transfers made to resident accounts or to transfers from one account in an individual member country of the group to another account belonging to the same country. There is no transferability between accounts listed in this group.

The accounts of residents of China (including Manchuria) and of Formosa are described respectively as Chinese Accounts and Formosan Accounts and are included with Bilateral Countries. However, with the exception of certain payments of a strictly personal nature, mostly of a recurring type, which have been regularly made in the past, all payments and transfers require permission of the Exchange Control. It should be noted that Hong-kong remains in the Scheduled Territories, but special restrictions are placed on the disposal of assets of residents there.

5) Other Countries include
Afghanistan, Albania, Andorra, Cyrenaica, Eritrea, Southern Korea, Liberia, Nepal, Saudi-Arabia, Somaliland, Tripolitania and the Yemen.

This group is not subject to restrictions as to transfers between the countries named or to transfers to United Kingdom Resident Accounts. Similarly, transfers from, but not to, American Account and Transferable Account countries are permitted.

Payments from accounts in all the foregoing categories may be made freely to residents of the Scheduled Territories and without need for official permission from a non-resident account to another non-resident account of the same country or area. Payments may be made from American Accounts to Transferable Accounts, but payments from Transferable Accounts to American Accounts are not permissible under existing conditions.

CANADA - In consequence of the recent decision of the Canadian Government to permit the exchange rate for the Canadian dollar to fluctuate in accordance with supply and demand, the Bank of England will no longer publish official rates for Canadian dollars. Authorized Banks may effect transactions with customers and with other Authorized Banks at market rates. Although Canada is not included in the areas to which Transferable Account arrangements apply, payments may be made from Sterling Accounts of specified Canadian banks to Sterling Accounts of residents in other countries outside the Scheduled Territories, providing the Canadian banks certify payment to be eligible for credit to the type of account to which payment is to be made. The Canadian dollar remains a specified currency. It is not permitted to provide United States dollars in exchange for Canadian dollars or sterling from a Canadian Account.

NON-RESIDENTS - Sterling transfers from the account of a resident in the Scheduled Territories to a non-resident require official authority which is normally given on the same lines as for sales of exchange.

New accounts in favor of non-residents require official permission. In the case of temporary visitors, accounts can be opened without delay subject to reporting to the Authorities. These accounts are subject to restrictions, that is to say,

funds credited thereto must emanate from the type of Sterling Account appropriate to the normal country of residence of the visitor, the accounts being subsequently designated accordingly. Accounts designated as American, Canadian or Swiss Accounts may be credited additionally with the sterling proceeds of sale to the Bank of England of Canadian and/or United States dollars or Swiss francs (travelers checks, letters of credit, drafts or notes).

Subject to certain requirements, Authorized Banks may approve applications to transfer sterling to non-resident accounts or to purchase foreign currency on behalf of residents of the Scheduled Territories (other than the United Kingdom) without restriction as regards the amount involved for the purpose of the transfer. Further, subject to certain requirements, Authorized Banks may approve payments to non-residents for imports into the Scheduled Territories (other than the United Kingdom) financed or arranged through merchants in the United Kingdom.

Overdrafts or other forms of credit to non-residents are not permissible without official authority. United Kingdom residents may not borrow under the guarantee of a non-resident without the prior sanction of the Control, e.g., a British company may not borrow under the guarantee of an American parent company without permission. Also, the terms of the Exchange Control Act stipulate that official permission is required before resident British companies which are controlled outside the Scheduled Territories can borrow. Conversely, United Kingdom residents may not guarantee the extension of facilities to firms or parties resident outside the Scheduled Territories without first receiving authority from the Bank of England.

Firms and persons resident in the Scheduled Territories, who desire to enter into an agreement with a firm or person resident outside that area whereby monies are payable in respect of a service, e.g., royalties, should obtain the prior approval of the Control as otherwise it cannot be taken for granted that foreign exchange for such payments will always be forthcoming.

NEW CAPITAL INVESTMENT IN THE UNITED KINGDOM BY NON-RESIDENTS - Capital directly invested after January 1, 1950, by non-residents in projects approved by the Exchange Control Authorities may be repatriated at any time thereafter to the extent of the original investment and from the proceeds of that investment.

The investment may be made in one or more of the following ways:

1) By means of the sterling proceeds of specified currency appropriate to the country of permanent residence of the investor.

2) By sterling from an appropriate non-resident banking account.

3) By sterling eligible for remittance to the non-resident investor.

4) By goods and services from the country of permanent residence of the investor.

This concession will be operated as follows:

1) It will not normally apply to the purchase of shares on a stock exchange, unless this forms an integral part of an approved investment project.

2) The amount available for repatriation will be restricted to the amount of sterling originally invested. In the case of investment by means of goods or services, the amount will be the sterling value of such goods or services as recorded in the books of the company at the time of investment.

3) Where the investment does not require permission under existing Exchange Control regulations, e.g., where it is through a branch in the United Kingdom, the investor will not qualify for the concession, unless he obtains Exchange Control approval of his project at the time of making his investment.

4) Approval for repatriation will take the form of Exchange Control permission for the credit of the agreed sterling amount to the appropriate non-resident sterling account.

5) Repatriation will only be allowed to the country from which the investment originated.

It is important to note that all projects must receive the prior approval of the Exchange Control Authorities, this being obtained ordinarily through the bankers of the interested party.

COMMERCIAL TRANSACTIONS

Commercial Credits may be opened to take care of shipments of goods to or from the United Kingdom. Except where no transfer of funds out of the Scheduled Territories is in question, credits opened require approval of the Control and in the case of exports are subject to the proceeds being returned to this country in the appropriate manner, e.g., in the case of exports to the United States, reimbursement must be provided through an American Account or by means of United States dollars. In the ordinary way, credits should not exceed 9 months duration and terms should provide for drawings at sight or up to a maximum of 120 days.

Direct Credits - Approval Registration is no longer required of

a) credits in respect of exports from the Scheduled Territories (other than the United Kingdom), which are to be opened direct by banks in countries outside the Scheduled Territories in favor of beneficiaries in the Scheduled Territories (other than the United Kingdom) covering goods originating in the Scheduled Territories, or

b) credits in respect of imports into the Scheduled Territories (other than the United Kingdom), which are to be opened direct by banks in the Scheduled Territories (other than the United Kingdom) in favor of beneficiaries in a country outside the Scheduled Territories covering goods originating in that country, if a bank in the United Kingdom acts solely in the capacity of a reimbursing agent and is in no way committed under any advice of receipt of reimbursement instructions.

Import licenses must be held and valid for the period of the credit. In exceptional circumstances licenses may be granted for periods longer than 9 months on application to the Import Licensing Department and when granted, the Exchange Control would most likely be willing to authorize credits for the validity of any such license. Where it can be evidenced that goods of United Kingdom origin have been paid for in United States dollars and resold to another country, permission can generally be obtained from the Control to credit proceeds of sale to American Account.

Freights Payable - It is the practice of the Bank of England to provide foreign exchange cover against commitments payable in a foreign currency in respect of freight on specific shipments of goods on production either of documentary evidence of a firm contract expressed in the currency in question or of a close estimate properly documented and acceptable to the Bank of England of the currency liability involved.

The Bank of England is prepared to consider applications by or on behalf of United Kingdom residents acting as principals to purchase forward United States dollars in respect of freights payable in sterling but which in accordance with Conference rules are calculated on a United States dollar basis.

A forward contract must be closed out and the dollars resold at the Bank's appropriate official buying rate on the day on which settlement for the freight charges is effected. Forward cover will be provided under these arrangements on the understanding that the dollars will not be delivered and that, if settlement for the freight is not effected by the forward maturity date, the contract will be extended on a swap basis.

Refinance Operations - The Control's approval for the refinancing of specified commodities can be obtained only by special application. Refinance drafts must relate to specific shipments and be drawn by the purchasing merchant on the London banker; drafts must not exceed 120 days sight.

TRAVEL - During the year May 1, 1950, to April 30, 1951, persons regarded as resident in the United Kingdom (but not persons who have emigrated) will be entitled to a basic allowance permitting them to purchase the appropriate foreign currency or to transfer sterling to the appropriate type of non-resident account up to an amount of £100 for adults and £70 for children under 15 years of age. For the present this applies to the following countries: Argentina, Austria, Brazil, Chile, Cyrenaica, Czechoslovakia, Egypt, Eritrea, Ethiopia,

Finland, France (including Algeria and Corsica), Monaco, French Morocco and Tunisia, Greece, Iran, Israel, Italy (the mainland of Italy, Sardinia, Sicily and the adjacent islands), The Republic of San Marino and the Vatican City, The Netherlands, Paraguay, Peru, Portugal (including Madeira and the Azores), Saudi Arabia, Somaliland (Italian), Spain (including the Balearic and Canary Islands, Ceuta, Melilla and the Spanish Zone of Morocco), Sudan, Switzerland and Liechtenstein, The Free Territory of Trieste, Tripolitania, Turkey, Uruguay, Western Zones of Germany (including the American, British and French Sectors of Berlin), and Yugoslavia.

Special arrangements in respect of travel in Denmark and the Faroe Islands, Norway and Sweden whereby persons, regarded as resident in the United Kingdom (but not persons who have been granted emigration treatment), may be granted facilities up to a maximum of £250 per individual during any 12 months ending February 28 as shown by the entries on the relative passports. The basic travel allowance and allowances for travel in the above countries are not available to persons who have been granted emigration treatment, whether or not they have left the United Kingdom. Applications for an allowance in excess of £250 per person in any 12 months ending February 28 will receive consideration.

Special allotments of exchange will be granted in respect of expenses incurred on business or official journeys outside the Scheduled Territories and may also be granted in exceptional circumstances for travel on health, compassionate or educational grounds or other reasons. For taking a car abroad, an additional allotment of exchange to the value of £20 may be obtained, subject to certain conditions.

Travelers from America and other foreign countries and residents returning to the United Kingdom may not bring into the United Kingdom sterling notes in excess of £5. There is no limitation as to the amount of hard currency notes which may be brought in, but travelers should arrange to have all such sums of currency marked in their passports on arrival. Soft currencies are very severely restricted as to the amount which may be brought in. Similarly, persons leaving the United Kingdom may take out £5 in sterling notes without permission and, in addition, foreign currency notes not exceeding the equivalent of £10. Except where an appropriate entry has been made in the traveler's passport at the time of entering the United Kingdom, authority must be obtained to take out larger sums (e.g., where an American wishes to take out United States notes for an amount larger than $28) or for valuables, such as securities, life policies, documents of title or gold. Exchange granted in respect of travel may be made available only in the form of travelers checks, letters of credit or other facilities in sterling or foreign currency which are encashable abroad only on the personal application and identification of the traveler or in foreign currency notes within the limit of £10 mentioned above. No permit is needed by non-residents to take out travelers checks or cash letters of credit.

Sterling notes may not be sent through the post into or out of the United Kingdom. There are no restrictions on the import and export of sterling bank notes or foreign currency notes as between the United Kingdom and the Channel Islands and Eire, but it should be noted that both the Channel Islands and Eire impose

restrictions (similar to those in force in Great Britain) on the import and export of sterling bank notes and foreign currency except in the case of travelers to and from the United Kingdom.

It is illegal for residents to cash outside the Scheduled Territories checks drawn on their sterling accounts or on any foreign currency accounts at their disposal, unless appropriate permission has been obtained through a United Kingdom bank to do so. It is also a serious offense to borrow foreign currency or to enter into any other agreement to obtain foreign currency except with permission obtained through a bank in the United Kingdom. It is illegal to enter into arrangements under which residents make payments in the United Kingdom in consideration for or in association with payments made outside the Scheduled Territories on such residents' behalf, (e.g., hotel bills, etc.).

EMIGRANTS - The term emigrant is used to refer to any individuals or families (husband, wife and dependent children) who are regarded for the purposes of the Exchange Control Act as resident in the United Kingdom and who intend to take up permanent residence in a country outside the Scheduled Territories except Canadians returning to Canada and persons who are not nationals of a country within the Scheduled Territories returning to the country of their nationality. The term United Kingdom refers to the United Kingdom, the Channel Islands and the Isle of Man. During the 4 years following their departure, emigrants may apply to have the following allowances made available to them in their new country out of their total assets, including foreign currency assets:

> Not more than £5,000 transferable in 4 equal annual installments; but if total assets are less than £2,000, up to £500 per annum will be transferable.

These allowances refer to emigrants to the following countries: Austria, Countries in the Belgian, Dutch and Portuguese Monetary Areas, Countries in the French Franc Currency Area, Denmark, the Faroe Islands and Greenland, Greece, The Italian Republic, Italian Somaliland, The Republic of San Marino and The Free Territory of Trieste, Norway, Sweden, Switzerland and Liechtenstein, Turkey and Western Zones of Germany.

Emigrants to any other country have allowances made available to them of not more than £1,000 which will be transferable in annual installments up to £250.

Anticipation of part or all of the installments due in subsequent years may be allowed if the funds are required for some purpose essential to the applicant's emigration plans. At the end of the 4 year period emigrants will be regarded on application as residents of the country to which they have emigrated, and any remaining sterling capital will remain in the United Kingdom, but any income then accruing on that sterling capital or from other sources in this country will be transferable. Non-sterling assets of such emigrants will be at their free disposal insofar as United Kingdom regulations are concerned.

Exceptionally, emigrants to Denmark, the Faroe Islands and Greenland, Norway and Sweden may be allowed to receive an increased allowance for essential purposes

and after 4 years residence abroad may obtain certain privileges following the change in their residential status.

SECURITIES - Securities may be purchased to the debit of a United States or other non-resident account appropriate to the country of residence of the new owner, and with permission these securities may be sold for the purpose of reinvestment in other securities within the limitations outlined below. Alternatively, when the securities are payable solely in sterling, application may be made for permission to sell the securities and have the proceeds credited to a Blocked Sterling Account which is subject to restrictions for investment already described.

Subject to certain conditions, residents of Denmark, the Faroe Islands and Greenland, Norway and Sweden may obtain permission to sell securities and have the proceeds credited to an account appropriate to the country of residence of the owner.

For a certain period in the past it was possible to sell securities with authority to credit the proceeds to the same type of account as that originally debited, but this privilege is no longer obtainable. Where such an authority in the form of the special license issued during that period is still in existence, it may be implemented. Should there have been a change of residential status since the issuance of the license, application must be made to the Bank of England before the license can be utilized.

Securities purchased through a United Kingdom stock exchange may be registered in the name of the owner or in the name of a United Kingdom nominee. Alternatively, they may be registered in the name of a nominee who is a non-resident, provided the nominee is a resident of the same country as the beneficial owner. In all cases where securities are registered in the name of a nominee, the country of residence of the beneficial owner must be disclosed on the appropriate declaration. When securities are deposited with a bank to be recorded for account of a non-resident who is not the owner, the address of the non-resident must be in the same country as that of the beneficial owner.

The following types of securities, when held in the United Kingdom, whether belonging to residents of the United Kingdom or Scheduled Territories or to non-residents (including residents of the United States), must under the Exchange Control Act 1947 be deposited with an Authorized Depositary:

bearer securities (with minor exceptions),

securities where interest or dividends are payable by coupons,

registered certificates issued outside the Scheduled Territories, and

registered certificates, with certain exceptions in the case of Canadian securities, issued within the Scheduled

Territories which can be transferred to a register outside the Scheduled Territories.

Any securities of the foregoing categories held abroad for residents must also be brought under the control of an Authorized Depositary, and until securities to which this regulation applies have been so deposited they may not be sold, transferred or otherwise dealt with.

Depositable securities may no longer be accepted by an Authorized Depositary without giving the Bank of England a satisfactory explanation as to the reason why the securities were not previously deposited, and also details of where they have been held since October 1, 1947.

Income by way of interest, dividends, etc., on investments in the United Kingdom may be credited with little formality to American or other non-resident accounts (or remitted in dollars, etc.) in favor of the beneficial owner. This provision enables the transfer of dividends declared out of profits earned by American-owned subsidiaries, but specific approval is required in each case.

Capital, however, may not be sent out of the United Kingdom without official permission, and applications to remit may result in the funds being directed to a Blocked Sterling Account, subject to the restrictions for investment already described.

When a non-resident desires to sell a security of the Scheduled Territories for the purpose of reinvestment, application must be made to the Bank of England for a switch license on Form L. This license will normally be granted when the security to be purchased is payable solely in a currency of the Scheduled Territories and is not redeemable earlier than 10 years from the date of purchase or in the case of issues with fixed maturity dates, the security to be purchased is not shorter dated than the security to be sold.

Permission is required before transfers of securities can be effected between non-resident owners or between a resident of the Scheduled Territories and a non-resident. Residents may with official permission effect certain transactions on foreign stock exchanges.

Applications on Form L must contain satisfactory evidence that the security to be sold has been in the possession of a resident of the same country as the present beneficial owner since September 1, 1950. This particularly effects securities registered in the names of foreign or United Kingdom bank nominees or those held in London in bearer form for account of foreign banks.

Permission is required for the import into the United Kingdom and for the export from the United Kingdom of all securities (irrespective of currency of denomination or whether cancelled or not) and any document certifying their destruction, loss or cancellation, except registered certificates in respect of securities on which interest or dividends are not payable by coupon and which are registered in a register in the Scheduled Territories which is not a subsidiary register.

When permission has been granted for the import of bearer securities payable in a currency of the Scheduled Territories in respect of which there are facilities in the United Kingdom for registration as to both principal and interest or dividends, this permission will be conditional upon the securities (except drawn or matured securities) being so registered immediately after importation. Permission will not normally be granted for the export of sterling bearer securities of any type. In certain circumstances, however, such as the overstamping of bonds, permission can be obtained to import and export the bonds in bearer form.

The Control is also prepared to give consideration (each case being treated on its merits) to the transfer to American or other non-resident account of monies derived from the following:

a) capital repayments in respect of mortgages or drawn or matured securities (normally, capital funds resulting from the redemption or drawing of a security in accordance with the terms of the original issue are remittable to the beneficial owner),

b) distributions from the estates of deceased persons who at their death were residents of the Scheduled Territories. (In the case of American or Canadian Accounts permission will normally be granted when the amount does not exceed £500. Amounts in excess of that figure will be directed to a Blocked Sterling Account),

c) distributions under settlements created by residents of the Scheduled Territories,

d) profits of companies resident in the Scheduled Territories and service charges due from such companies,

e) sales of real estate and personal effects,

f) distributions on the sale or winding-up of companies,

g) surrender of life or endowment policies, or

h) withdrawals from accounts with Building Societies.

BLOCKED STERLING ACCOUNTS are not linked with any other type of non-resident accounts and are opened under direction from the Bank of England. The purpose of such accounts normally is to receive capital funds which the Authorities will not permit to be held at the free disposal of the account-holder.

Funds in such accounts are available only for investment in securities payable solely in currencies of the Scheduled Territories and which are quoted on a recognized security market in the Scheduled Territories. Such securities must not be redeemable earlier than 10 years from the date of purchase.

OFFSETTING OF CAPITAL ASSETS - The Bank of England is prepared to consider applications for permission to exchange blocked sterling balances and/or sterling securities owned by non-residents for blocked foreign currency balances and/or blocked foreign currency securities owned by United Kingdom residents, provided

a) any sterling securities involved are valued at the current price on a stock exchange in the United Kingdom and any foreign currency securities at the current price on the appropriate market abroad, and

b) the official rate of exchange is used to compute equivalent values of the assets to be exchanged.

It must be understood that the respective parties have agreed to the exchange before application is made to the Bank of England.

GENERAL INFORMATION

PATENTS, DESIGNS & TRADE MARKS - Authorized Banks may now approve applications submitted by residents of the United Kingdom to make payments to persons resident outside the Scheduled Territories in respect of professional services, viz., the cost of obtaining or maintaining the grant or registration of patents, designs and trade marks and the normal professional charges and fees incurred in doing so, including the cost of searches.

H.M. FOREIGN SERVICE OFFICERS, OTHER H.M. CIVIL SERVANTS AND MEMBERS OF H.M. FORCES SERVING OUTSIDE THE SCHEDULED TERRITORIES - The term H.M. Foreign Service Officers includes all United Kingdom based staff paid by the Foreign Office of H.M. Embassies, Legations and Consulates, whether established or temporary; members of the Office of the United Kingdom High Commissioner in Canada; and except as otherwise provided Service Attaches and their Assistants accredited to H.M. Embassies and Legations. Arrangements have been made to regulate the extent to which persons in the above-named categories, who are regarded, for all purposes of the Act, as resident in the United Kingdom, may draw on their resident sterling accounts for local requirements during their term of service in countries outside the Scheduled Territories.

DIPLOMATS are treated for all purposes of the Exchange Control Act as residents of the country which they represent and their accounts designated accordingly.

PURCHASE TAX SCHEME - To facilitate sales to Canadian and United States visitors to Great Britain, who wish to buy goods for use here but are unwilling to pay the ordinary price, inclusive of Purchase Tax, the Treasury approved a scheme which came into force August 22, 1949, and which was revised as from April, 1950.

Any person holding a Canadian or United States passport, who encashes not less than the equivalent of £15 in Canadian and/or United States dollars or a similar sterling amount derived from a Canadian and/or American Account, will be entitled to one sheet, comprising 5 Purchase Tax Coupons which carry the right to

purchase goods free of Purchase Tax. Additional sheets may be issued for every extra £15 encashed up to a maximum of 36 sheets, i.e., 180 coupons per person during any period of 12 months. If a man and wife together encash sufficient exchange, then up to 36 sheets may be issued to each of them, provided entries are made in both passports, or two entries in one passport if it covers both persons. Similarly, up to 36 sheets may be issued in respect of each child not having a separate passport, provided sufficient additional exchange is encashed by parents and entries are made in the parents' passports. The Purchase Tax Coupons may not be sent to an applicant by post, but only handed out against personal application at a bank counter.

EXCHANGE CONTROL ARRANGEMENTS FOR PARTICIPATION IN THE COFFEE MARKET SCHEME - Under Defence (Finance) Regulations 1939 the Bank of England set in motion a scheme which regulated the way in which coffee importers and exporters were to conduct their business. Each participant receives from the Import Licensing Department a license authorizing him to import coffee into the United Kingdom for resale abroad or to any holder of a similar license, or to a person specifically authorized by the Ministry of Food to buy coffee. Coffee may be imported into the United Kingdom under the terms of such license and held in bond until re-export, or it may be held abroad in the country of origin, or elsewhere, and shipped direct to buyers; in the latter case, sales in the United Kingdom may be made only to any participant in these arrangements or to a holder of a valid import license.

Participants are required to open with their bankers a Coffee Receipts Account to which must be credited payments received by them in respect of coffee sold to buyers in countries outside the Scheduled Territories, including the sterling proceeds of any such payments received in foreign currency. Once such amounts have been credited to a Coffee Receipts Account they will be at the free disposal of the account holder and, consequently, may be drawn off at will. The Bank of England is interested solely in the credit entries on the account, the purpose being to establish that all coffee sold outside the Scheduled Territories is paid for with non-resident funds. A special return must be made by the trader to the Bank of England each month giving the details of the transactions which have passed over the special Coffee Receipts Accounts.

IMPORT AND EXPORT LICENSING REGULATIONS

Licenses are required for many imports except (a) bona fide trade samples, (b) goods, excluding diamonds (other than rough diamonds) mounted or unmounted and jewelry containing diamonds, manufactured or produced in the United Kingdom, which after being exported to a country within the Scheduled Territories (Sterling Area) are returned to the sender by parcel post in the same state as that in which they were exported, (c) goods imported for repair and re-export, (d) personal or household effects and (e) bona fide unsolicited gifts. Transshipment licenses are no longer required for goods (with certain exceptions, mainly butter, fats and oils (edible and non-edible), including shortening and margarine, oil-bearing seeds, soap, meat - fresh, frozen, pickled, salted, smoked, canned and dehydrated meat (excluding fresh and frozen poultry, game, rabbits and venison), and rabbit skins, which are imported and entered with His Majesty's

Customs for exportation after transit through the United Kingdom or by way of transshipment. A system of open general licenses is in force for many goods. This system allows such goods to be admitted without the need for individual license if consigned from and originating in any country other than Albania, Argentina, Bolivia, Bulgaria, Canada, Colombia, Costa Rica, Cuba, Czechoslovakia, Dominican Republic, Ecuador, El Salvador, French Somaliland, Russian Zone of Germany, Guatemala, Haiti, Honduras, Hungary, Iran, Japan, Korea, Liberia, Liechtenstein, Mexico, Nicaragua, Panama, Philippines, Poland, Rumania, Tangier, United States, Union of Socialist Soviet Republics, Venezuela, and Yugoslavia.

LIST OF COUNTRIES INCLUDED IN THE SCHEDULED TERRITORIES

AFRICA

Basutoland
Bechuanaland Protectorate
Gambia (Colony & Protectorate)
Gold Coast -
  Ashanti
  Colony
  Northern Territories
  Togoland under British Mandate
Kenya (Colony & Protectorate)
Mauritius
Morocco Agencies
Nigeria -
  Colony
  Protectorate
  Cameroons under British Mandate
Northern Rhodesia
Nyasaland Protectorate
Perim
St. Helena and Ascension
Seychelles
Sierra Leone (Colony & Protectorate)
Somaliland Protectorate
South West Africa
Southern Rhodesia
Swaziland
Tanganyika Territory
Uganda Protectorate
Union of South Africa
Zanzibar Protectorate

AMERICA

Anguilla
Bahamas
Barbados
Barbuda Islands
Bermuda
British Guiana
British Honduras
Falkland Islands and Dependencies
Jamaica (including
  Caicos Islands
  Cayman Islands, Turks Island)
Leeward Islands -
  Antigua
  Montserrat
  Nevis
  St. Christopher (St. Kitts)
  Virgin Islands (British)
Trinidad and Tobago
Windward Islands (Dominica)
Grenada
St. Lucia
St. Vincent
Tristan da Cunha

ASIA

Aden (Colony & Protectorate)
Andaman Islands
Bahrein Islands
Brunei
Burma
Ceylon
Cyprus
Hashemite Kingdom of the Jordan
Hongkong
India
Iraq
Kuwait
Labuan
Malayan Federation
- Johore
- Kelantan Perlis
- Malacca
- Negri Sembilan
- Pahang Kedah
- Penang
- Perak
- Selangor
- Sungei Ujong
- Trengganu

Maldive Islands
Muscat
Nicobar Islands
North Borneo
Pakistan
Perim
Persian Gulf Territories
- Adu Dhabi
- Ajmen
- Dubai
- Kalba
- Muscat
- Oman (including Gwadur)
- Qatar
- Ras Al-Khaimah
- Shargah
- Umm Ul Quwain

Sarawak
Singapore
Sokotra

EUROPE

Channel Islands
Gibraltar
Great Britain
Iceland
Irish Republic
Isle of Man
Malta
Northern Ireland

AUSTRALIA AND THE PACIFIC

Australia and Tasmania
British New Guinea
British Solomon Islands
Cook Islands
- Aitutaki
- Niue
- Rarotonga Penrynn Islands

Fiji
Kermadec Islands
New Zealand
Pacific Islands
- Friendly Islands
- Gilbert and Ellice Islands
- Nauru
- Tonga
- Western Samoa

Papua
Pitcairn
Samoa
Santa Cruz
Union Islands

AFRICA

ALGERIA (See France)

BASUTOLAND

Local £ = U.S.$2.80.

Exchange control is based on regulations in force in the United Kingdom.
Import license system is based on South African control.
Export licenses are required in most cases.

BECHUANALAND PROTECTORATE

Local £ = U.S.$2.80.

Exchange control is based on regulations in force in the United Kingdom.
Import license system is based on South African control.
Export licenses are required in most cases.

BELGIAN CONGO

At the end of 1950 the official rate for the United States dollar was Congo Francs 50 to U.S.$1.

The purchase of exchange is subject to license by the Exchange Control. Imports are also subject to license, but it is understood that the Authorities are liberal in granting approval. The issuance of an import license carries with it an authorization to purchase the exchange required to pay for the goods. Forward exchange operations are permitted.

Travelers may enter Belgian Congo with unlimited amounts of foreign currency, letters of credit or travelers checks. Such holdings must be declared upon entry and may be freely exported when leaving the country. The import or export of local currency is subject to approval of the Exchange Authorities.

EGYPT

At the end of 1950 the official rate for the United States dollar was Egyptian £1 to U.S.$2.88.

All exchange transactions are governed by regulations. These include dealings resulting from the movement of goods, securities or any transfer of funds abroad.

Subject to approval of the Exchange Control, non-residents may carry 4 types of accounts, as follows: Non-resident, Blocked, Provisionally Blocked and

Non-resident Export Accounts.

These accounts are designated according to the country of residence, unless the country concerned is part of a monetary area, in which case they will be named according to that area, e.g., sterling area accounts or American accounts.

Non-resident Accounts may be credited with transfers from accounts of other non-residents of the same monetary area following the pattern of United Kingdom regulations; any other transactions are subject to special or general licenses under the regulations.

Certain debits may be passed over this type of account, such as those covering payments to residents, including payments for exports to the monetary area of which the account holder is resident, transfers to non-resident accounts of the same monetary area and direct remittances in the currency of the monetary area of which the account is designated non-resident.

Blocked Accounts are credited with any payment to a non-resident, which is not remittable under the regulations. As the name implies, balances carried in such accounts are restricted, but also following the pattern of United Kingdom regulations, Blocked Account funds can be used for investment in certain Egyptian securities.

The sale of securities purchased with funds from a Blocked Account may be allowed, but the proceeds may only be recredited to a Blocked Account. The proceeds of any securities purchased with funds from such an account, which are drawn or redeemed, cannot be remitted but must be recredited to a Blocked Account. Interest on securities purchased with funds from a Blocked Account may be freely remitted to a non-resident beneficiary or credited to a Non-resident Account. An amount of up to £1000 may be released in any 1 year to the holder of a Blocked Account in person to cover his expenses while staying in Egypt.

Provisionally Blocked Accounts are in a category special to some countries for which profits and revenues are provisionally non-transferable in view of the scarcity of the currency of residence of the account holder, such as Canada, Portugal and the United States. However, balances in these accounts may be used for investment in securities in Egypt under the same conditions as indicated for Blocked Accounts, travel expenses for the account holder while visiting Egypt, as well as maintenance allowance for his close relatives in the country and for maintenance allowances to the account holder in his country of residence upon submission of evidence of need.

Non-Resident Export Accounts - These accounts, carried in Egyptian pounds, were designed for use in connection with the settlement of goods imported from hard currency countries and bear mention of the monetary area to which the owner belongs.

Payments to the credit of these accounts were not possible heretofore except upon the production of shipping documents in respect to the underlying goods, and payment in advance on the basis of documentary credits were not allowed.

However, a new regulation now permits credits to such an account, under a documentary credit, before the production of shipping documents. The formalities to be completed and the obligations and guarantees to be assumed in this connection are outlined below:

1) Formalities - An Application for Exceptional Terms is to be submitted to the Central Exchange Control for each documentary credit separately, supported by proper documentary evidence, such as license, order note, etc.

2) Obligations - The bank in Egypt must see to it that not more than a proportion of 80% of the amount approved for payment in advance - and consequently credited to an Export Account - is utilized or transferred to another Export Account before the goods to be received are dispatched. The remaining 20% cannot be utilized or transferred to another Export Account except on production of on board bills of lading.

3) Guarantees - The bank in Egypt must provide the Central Exchange Control with a guarantee to the effect that in case of non-dispatch of the merchandise within 6 months from the date of approval of the payment in advance, it undertakes to repatriate to Egypt, in United States dollars at the official rate of exchange, the counter-value of all amounts utilized or transferred in favor of another Export Account to the extent of the 80% allowed and referred to above.

Funds paid into these accounts are restricted as to use and are not eligible for the settlement of Egyptian exports to the following: Argentina, Belgium, Brazil, Bulgaria, Canada, France, Germany (the Western Zones), Hungary, Japan, Poland, Portugal, Saudi Arabia, Switzerland, the United States and Yugoslavia. However, they may be debited in cover of (a) transfers to Export Accounts of soft currency countries, even if they are not part of the same monetary areas, and (b) payments to residents in Egypt. Accounts of this nature do not bear interest.

Imports from the United States are subject to license and the issuance of a license entitles the applicant to allocation of the exchange involved, obtainable either as spot or forward. The bulk of imports is financed through bankers commercial credits, but settlement is also made by documentary collections, provided the import license is produced by the drawee. In case of need and subject to authorization of the Export Permit Office, goods may be re-exported, provided the counter-value has not been paid abroad.

All travelers entering or leaving Egypt may hold up to the equivalent of £20 in bank notes in Egyptian pounds and/or foreign currency. If such holdings exceed that figure, the total must be declared and registered with the Customs Authorities when entering the country. This forms the basis for authority subsequently to take out an amount not exceeding that which was declared upon entry.

FRENCH EQUATORIAL AFRICA (See France)

FRENCH MANDATES (See France)

Camaroons
Togo

FRENCH MOROCCO

French Morocco is considered a part of the French Franc Currency Area. In a legislative sense it is quite independent from Continental France, but its laws in their main outline resemble those of the mother country. It follows from this that foreign exchange regulations in French Morocco are patterned after those in force in Continental France, Algeria and Tunisia. Foreign exchange control is centered in the Office Marocain des Changes which is in turn subject to the jurisdiction of the Caisse Centrale de la France d'Outre-Mer.

The French Moroccan franc is at par with the Continental franc. There is no distinction between the two; in other words, the present value of the French Moroccan franc in terms of United States dollars is around Fcs. 350 per U.S.$1.

Financial relations between French Morocco and countries outside the French Franc Currency Area are governed by instructions issued through the Caisse Centrale de la France d'Outre-Mer which body generally reissues the same notices published by the Office des Changes, the foreign exchange control organization for Continental France.

Accordingly, persons or corporate bodies resident in the United States are permitted to open Free Franc Accounts on the books of an approved bank in French Morocco. Such accounts can be freely fed only in one or two ways, namely, (1) by the proceeds of dollars sold on the free market in Paris and (2) by transfers from other Free Franc Accounts. Francs in Free Franc Accounts are freely reconvertible into dollars by purchasing them on the free market in Paris.

Foreign trade accounts between French Morocco and the United States can be settled either in dollars if the commercial contracts are in that currency, or in francs credited or debited to a Free Franc Account in the event that the commercial contracts are expressed in francs.

As indicated above, the United States dollar (as well as the Canadian dollar, Portuguese escudo and Swiss, Belgian and Djibouti franc) is traded in on the free market in Paris by approved banks. All other currencies must be bought or sold on the official market in Paris at rates which, in view of the parity between the French Moroccan and French Continental franc, are the same in terms of either of these monetary units.

American nationals residing in Morocco may import, under import licenses "without payment", certain goods listed in the French-United States agreement of December 31, 1949.

There are no limitations placed on the amount of francs and franc credit instruments which persons can take with them in traveling directly between France and French Morocco.

Travelers coming into French Morocco from outside the French Franc Currency Area are allowed to take in with them as many francs as they will, but in leaving French Morocco for a destination outside the French Franc Currency Area, travelers are not permitted to take out with them more than Fcs. 50,000 per person. The same applies for travelers between France and French Morocco when in transit by Spain or calling at Lisboa or Tangier.

Facilities accorded to American residents wishing to invest in the French Franc Currency Area (reconversion into dollars for transfer abroad of the proceeds of the liquidation or sale of the investments) are in force in French Morocco.

It should be mentioned that Tangier is considered as being outside the French Franc Currency Area.

FRENCH SOMALILAND (See France)

FRENCH WEST AFRICA (See France)

GAMBIA

Local £ = U.S.$2.80.

Exchange control is based on regulations in force in the United Kingdom. With the exception of some foodstuffs, all United Kingdom goods are admitted under open general license. Non-sterling area imports require license.
Export licenses also required for many goods.

GOLD COAST

Local £ = U.S.$2.80.

Exchange control is based on regulations in force in the United Kingdom. Import licenses are required for most goods, although many United Kingdom goods are imported under open general license.
Export licenses are also required for some goods.

KENYA

Local £ = U.S.$2.80.

Exchange control is based on regulations in force in the United Kingdom.
Import and export licensing system is based on United Kingdom procedure. Goods from the Scheduled Territories not covered by the "suspended" (prohibited), "programmed" or "scheduled" lists may be imported freely. Imports from other sources are subject to license.
Licenses are required for some exports.

LIBERIA

The United States dollar is legal tender in Liberia.

No foreign exchange controls or restrictions are in force and with the exception of the export of gold which is handled by Bank of Monrovia Inc., as agents under a government monopoly, no licenses are required for either exports or imports.

Travelers may carry travel instruments of payment with them without restriction as to amount, as well as any currencies whatsoever, and such holdings need not be declared on entering or leaving the country.

MADAGASCAR (See France)

MAURITIUS

Rupee = U.S.$0.21.

Exchange control is based on regulations in force in the United Kingdom.
Import licenses are required for some goods from the United Kingdom and for all foreign goods. Other United Kingdom goods are free under open general license.
Export licenses are required in some cases.

NIGERIA

Local £ = U.S.$2.80.

Exchange control is based on regulations in force in the United Kingdom.
Import licenses are not required for most United Kingdom goods; imports from other sources are subject to license.
Export licenses are also required for many goods.

NORTHERN RHODESIA

Local £ = U.S.$2.80.

Exchange control is based on regulations in force in the United Kingdom.
Import licensing regulations are based on United Kingdom system, requiring licenses for goods from all sources outside the Scheduled Territories, the latter qualifying for open general license treatment.
Export licenses are required for certain goods.

NYASALAND PROTECTORATE

Local £ = U.S.$2.80.

Exchange control is based on regulations in force in the United Kingdom.
Goods from the Scheduled Territories not covered by the "suspended" (prohibited), "programmed" or "scheduled" lists may be imported freely. Imports from other sources are subject to license.
Licenses are required for some exports.

PORTUGUESE EAST AFRICA (See Portugal)

Mozambique

PORTUGUESE WEST AFRICA (See Portugal)

Angola

REUNION ISLAND (See France)

ST. HELENA & ASCENSION

£ Stg. = U.S.$2.80.

Exchange control is based on regulations in force in the United Kingdom.
Import and export licensing regulations are based on United Kingdom system, i.e., some goods under open general license and some others including United Kingdom under license.

SIERRA LEONE

Local £ = U.S.$2.80.

Exchange control is based on regulations in force in the United Kingdom.
Import licenses are required for some United Kingdom goods and all other imports.

SOMALILAND PROTECTORATE

Local £ = U.S.$2.80.

Exchange control is based on regulations in force in the United Kingdom.
Import and export licensing regulations are based on United Kingdom system; all imports are subject to license.

SOUTH WEST AFRICA

Local £ = U.S.$2.80.

Exchange control is based on regulations in force in the United Kingdom.
Licensing system is similar to that of Union of South Africa.

SOUTHERN RHODESIA

Local £ = U.S.$2.80.

Exchange control is based on regulations in force in the United Kingdom.
Import licenses are required only for goods from all hard currency sources.

SUDAN (ANGLO-EGYPTIAN)

Currency is the same as that of Egypt.

There is an open general license for imports from the Scheduled Territories and certain other sources (excluding Aden), subject to certain exceptions. All other imports require licenses.
Export licenses are required in certain cases.

SWAZILAND

Local £ = U.S.$2.80.

Exchange control is based on regulations in force in the United Kingdom.
Import license system is based on South African Control.
Export licenses are required in most cases.

TANGANYIKA TERRITORY

Local £ = U.S.$2.80.

Exchange control is based on regulations in force in the United Kingdom.
Goods from the Scheduled Territories not covered by the "suspended" (prohibited),

"programmed" or "scheduled" lists may be imported freely. Imports from other sources are subject to license.
Licenses are required for some exports.

TANGIER

There are no restrictions or regulations in Tangier affecting foreign exchange operations or the movement of merchandise into or out of the country. Moreover, there are no restrictions as to the amount or type of currency which may be brought in, and it is not necessary for a traveler to declare his holdings.

The Spanish peseta and the Moroccan franc circulate freely in Tangier. At the end of 1950, the peseta and Moroccan franc were quoted as follows:

Pesetas	52.85 to U.S.$1
Moroccan Francs	386 to U.S.$1

TUNISIA (See France)

UGANDA PROTECTORATE

Local £ = U.S.$2.80.

Exchange control is based on regulations in force in the United Kingdom.
Goods from the Scheduled Territories not covered by the "suspended" (prohibited), "programmed" or "scheduled" lists may be imported freely. Imports from other sources are subject to license.
Licenses are required for some exports.

UNION OF SOUTH AFRICA

At the end of 1950 the official exchange rate was South African £1 to U.S.$2.78 3/8 - $2.80 1/8.

Exchange transactions are subject to Emergency Finance Regulations which are administered by the South African Reserve Bank. Forward exchange facilities are available for the payment of all imports, provided the purchaser has entered into a fixed exchange commitment and the related goods are covered by an import permit. The period of the forward contract is limited to the period of validity of the permit and may not in any case exceed six months. Moreover, new forward contracts may not be entered into nor can existing contracts be extended once the goods have been shipped to the Union.

Imports into the Union with few exceptions are subject to permits issued by the Director of Imports and Exports. Imports from hard currency countries during the first half of 1951 will have to be covered by "general" permits (styled

Universal Permits during the year 1950). Until such permits are available, letters of authority prefixed "L.A.G." are being issued to enable importers to place orders. Such letters will be replaced, however, by general permits at which time the former will cease to have any value. Import permits issued in respect to the first half of the year are to be available until September 30, 1951. Credits may be established on the strength of either letters of authority or general permits but must stipulate that the shipment must be effected not earlier than January 1, 1951, nor later than June 30, 1951. Credits may nevertheless expire July 31, 1951 and hard currency exchange (United States dollars, for example) will be made available to holders of general permits up to that date. The importation of hard currency goods from soft currency countries against the so-called "restricted" import permits requires the approval of the Control, which is granted only in most exceptional circumstances. Re-exports from the Union of goods originating in hard currency countries may now be made to Northern and Southern Rhodesia against import licenses issued in the territory concerned specifying the hard currency country of origin. Goods imported into the country may not be returned to suppliers, however, without approval of the Control. Optional bills of lading and shipments via a port in a country other than the country of destination are not permissible.

Securities acquired with funds remitted from the United States since October 1, 1948, may be negotiated freely, and the proceeds may be returned to the United States without restriction.

Control over dealings in other securities have been relaxed to the extent that non-residents may now switch their holdings into <u>any security quoted</u> on a registered stock exchange in the Union; in addition, non-residents may now sell other sterling area securities, either locally or in London, and purchase Union securities with the proceeds. The previous requirement that switches were to be confined to approved securities has been dispensed with.

Transfer of the income of subsidiaries or affiliates of American companies is limited to current dividends declared or profits <u>actually earned in the Union</u>, as disclosed by audited statements. This is in accordance with a general ruling applying to all principals or investors domiciled in countries outside the Scheduled Territories. Remittances of profits earned outside the Union are subject to Control approval, and this applies particularly to profits on exports of goods manufactured in the country under license from and for account of non-sterling area principals.

Union residents genuinely emigrating to the United States require the Control's approval in each case before any capital transfers are permissible; thereafter, income accruing to them from Union investments may at present be transferred within a limit of £1,000 per annum.

The remittance of royalties in terms of bona fide agreements entered into prior to January 1, 1949, is permissible but the Control's prior approval is required before payments under agreements subsequent to that date may be remitted.

Legacies or distributions from intestate estates may be transferred to hard

currency countries to the extent of £1,000 per beneficiary from the estate of a person who was a permanent resident of the Union.

Payments for services rendered would normally require the Control's sanction, but selling commission on exports may be remitted in the currency in which payment was received to an agent in the country to which the goods were exported at a rate regarded as reasonable in the particular trade.

ZANZIBAR PROTECTORATE

Local £ = U.S.$2.80.

Exchange control is based on regulations in force in the United Kingdom.
Import licenses are required for certain goods, known as "programmed imports" and there are also prohibited imports constituting "suspended" merchandise. Goods from the United Kingdom and Scheduled Territories not so affected may be imported freely under open general license. Imports from other sources are subject to license.
Export licenses are required in some cases.

NEAR EAST

ADEN

Local Rupee = U.S.$0.21.

Exchange control is based on regulations in force in the United Kingdom. Import and export licensing regulations are based on the United Kingdom system, import licenses being required for some, but not for most, United Kingdom goods which are admitted under open general license.

IRAN

The currency unit is the Iranian Rial and the official exchange rate for the United States dollar at the end of 1950 was Rials 32.50 to U.S.$1.

The Exchange Control Committee at its discretion will issue licenses entitling the holder to purchase exchange for non-commercial uses which include expenses of Iranian students studying abroad and expenses of persons going abroad for medical treatment.

Exchange available for imports is derived from the repatriation of proceeds of payment in foreign funds which the Iranian exporters receive for goods sold abroad. Within a limited time an Iranian exporter must sell the foreign exchange to an authorized bank or use it to pay for imports. If he decides not to purchase goods abroad, he is able to dispose of his exchange by selling it as stated above and he receives a premium of Rials 16.25 to the dollar in addition to the equivalent in local currency at the official buying rate of Rials 32 to the dollar. The total the exporter receives under such circumstances would be Rials 48.25 and if an importer desires to purchase dollar goods, he would pay for them on the same basis except for the added small difference between the official buying and selling rate or Rials 0.50 to the dollar. This premium of Rials 16.25 is paid by the importer for permitted goods classified as non-essential. For certain goods on the so-called essential list, the Authorities permit the sale of exchange at the official rate of Rials 32.50 plus a premium of only Rials 7.50, according to the latest quotation. As in the case of the basic rate, the premium rates are fixed by government decree. These premium rates are understood to be of a permanent nature and not affected by supply and demand. However, they may be altered by government decree without prior notice.

Imports are subject to control, but the regulations governing certain commodities and merchandise have been relaxed recently to the point where most imports are not subject to the customary quota reservation for a period up to March 20, 1951. This was done by government decree dated December 10, 1950. The list of goods affected by the decree is rather extensive, but for goods not so listed, the Iranian importer must obtain the quota reservation before placing an order. It is understood that the quota reservation is the document of importance, but in addition an import license is required for all goods. However, the import license is generally issued without difficulty after the goods have arrived.

Nevertheless, it has been emphasized that the license is not issued unless the shipping documents are in order. The requirement to include the date and number of the quota reservation in documents sent to Iran for collection has been rescinded.

IRAQ

The official rate of the currency unit at the end of 1950 was Dinar 1 per U.S.$2.80.

All sales of foreign exchange require approval of the Exchange Control Authorities, but within certain limits licensed banks are authorized to grant approval on behalf of the Control. As a general rule, however, any clean payment and every transfer of capital requires special approval of the Control.

Imports from the United States must be licensed and while the issuance of an import license does not at present officially engage the Exchange Control, in practice the necessary exchange is normally granted. Imports are financed largely through bankers credits, although shipments are made upon a documentary draft basis. In the latter case it should be kept in mind that the collecting bank cannot deliver documents unless an import license has been obtained and the exchange permit has been granted by the Exchange Control. Provided goods have not been cleared through Customs, they may be re-exported in case of need when a license has been obtained; in connection with such re-exportation no expenses are incurred except those for normal demurrage and handling charges.

A traveler may carry letters of credit and travelers checks into Iraq without limitation, but the regulations forbid bringing in foreign or local notes having a value in excess of Dinar 15. A traveler may declare his holdings when entering the country in order to avoid difficulties upon his departure.

ISRAEL

At the end of 1950 the official rate of exchange was Israeli £ per U.S.$2.80.

All transactions in foreign exchange without exception are subject to approval of the Controller of Foreign Exchange. The regulations with respect to the transfer of income or the proceeds from the redemption of securities and other capital assets of non-residents are similar to those in force in the United Kingdom. Accounts in the name of non-residents can be opened only with the approval of the Exchange Authorities and such approval is also required for all operations over the accounts.

Licenses are required for all exports and imports, and in the case of imports the issuance of an import license carries with it an undertaking on the part of the Authorities to allocate the necessary exchange at settlement date. Generally, imports from the United States are financed by documentary bank credits, and the importer must submit an import license and exchange permit to his banker upon applying for the establishment of a credit. With respect to the

presentation of United States dollar documentary collections, the acceptance of a provisional deposit (equivalent in local currency) is mandatory. The re-export of merchandise is subject to approval of the Authorities, but it is usually granted in bona fide cases.

A traveler may bring only Israeli £25 in local currency into the country, but may carry with him United States currency, travelers checks, letters of credit, etc., without limitation. These holdings must be declared upon entry, and the declaration forms the basis for freely exporting them when departing, but any difference in the amount declared must be evidenced by official receipts of sales of the foreign currency to authorized dealers.

JORDAN, HASHEMITE KINGDOM OF THE

The currency unit is the Jordan Dinar which replaced the Palestine pound. The latter ceased to be legal tender on September 30, 1950, but Palestine coin remains legal tender until further notice. The official rate of exchange is Dinar 1 per U.S.$2.80.

All sales of exchange are subject to approval of both the local and United Kingdom Exchange Control. No forward operations are permitted. All exchange acquired by residents must be surrendered to an authorized dealer.

The opening of all bank accounts in favor of non-residents is subject to approval of the Exchange Authorities. Transfers of funds from such accounts may be made without approval only to resident accounts in the country or to accounts of the same residential status. All other debits must be officially approved. The only permitted credits are those from accounts of the same classification; all others require approval of the Authorities.

Exports and imports are subject to license and as a first step preliminary to opening a credit, an import license must be obtained from the Import Committee. Once the license is acquired, the buyer of the goods may apply to the Controller of Exchange for the foreign currency permit. Documentary credits for beneficiaries in the Scheduled Territories are opened direct without the authorization of the Exchange Control in the United Kingdom. All other documentary credits, that is, opened in favor of beneficiaries outside the Scheduled Territories, require the approval of the United Kingdom Exchange Control.

When imports are financed on a documentary collection basis, it is essential that the importer secure the import license before the arrival of the goods. Subsequently and in order to effect settlement, application is made to the Controller of Exchange for the necessary exchange permit which is normally automatically granted on the strength of the import permit. Such transactions are subject to the approval of the Exchange Control in the United Kingdom, unless the beneficiary of the payment resides in the Scheduled Territories. Should goods arrive in the country without the issuance of an import license, entry may be refused and the importer is liable to a fine. In connection with a United States dollar transaction the fine at present would amount to 50% of the invoice value of the goods.

Travelers are permitted to bring United States currency and credit instruments into the country without limitation. These holdings are declared upon entry and none in excess of the declared holdings may be taken out upon leaving the country.

LEBANON

At the end of 1950 the official rates for the United States dollar were:

Buying: Lebanese Piastres 219
Selling: Lebanese Piastres 221

There is also a free market and at the end of 1950 the rate of exchange was about Piastres 377 to U.S.$1. A Foreign Exchange Stabilization Fund established in 1949 is authorized to buy and sell all kinds of foreign exchange in the free market for the purpose of stabilizing rates.

With the exception of French francs and the foreign exchange acquired through settlement for exports (which may be freely used by the exporter), as well as exchange of certain countries not appearing in the official list of the Exchange Office, all exchange originating from abroad, such as checks, payment orders, transfers, credits and coupons for which credit is passed to a free account, is subject to sale of 10% of its value to the Exchange Office at the official rate. The balance may be held without conversion or sold by the owner in the free market. Foreign currencies not listed by the Exchange Office, and bank notes and coin of any country may be brought in and sold without restriction. Foreign exchange purchased in the free market may be transferred abroad without limitation. The foreign currencies named below are those which comprise the official list of exchange quoted by the Exchange Office:

Belgian franc	French franc	Swiss franc
Canadian dollar	Irakian dinar	United States dollar
Egyptian pound	Pound sterling	

A license is required for all import operations whatever they may be. When the importer files an application with the Exchange Board for foreign exchange at the official rate, he must have the import license in his possession. On the other hand, if the importer purchases the exchange in the free market, he is entitled to file application for license only upon arrival of the merchandise at the Customs.

Accounts for non-residents may be opened and operated without restriction.

PERSIAN GULF SHEIKDOMS

The responsibility for exchange control in the following Skeikdoms has recently been transferred to H.M. Government's Political Resident there:

Bahrein	Adu Dhabi	Ras al-Khaimah	Qatar
Kuwait	Shargah	Umm ul Quwain	Muscat
Dubai	Ajman	Kalba	Oman (including Gwadur)

Banking facilities are established at Bahrein, Kuwait, Dubai and Muscat and may be available at the other places by arrangement. The currency in circulation throughout the territory is the Rupee with a current exchange rate of Rs.13.26 to £1, or approximately U.S.$0.21115 per rupee (calculated at U.S.$2.80 1/8 for sterling).

There is no system of import licensing in the Sheikdoms nor, in the normal sense, any question of local control approval. Instead, all applications to make payments outside the Scheduled Territories out of official exchange resources must be supported by a numbered Letter of Recommendation issued by or on behalf of the Political Resident. Certain authorities in connection with the approval in London of such applications have been given to the Eastern Bank Ltd. and the British Bank of Iran and the Middle East, their branches being the only banks operating in the territories. Applications submitted to other United Kingdom banks should be passed to the Bank of England for approval.

SAUDI ARABIA

The currency unit is the Saudi Riyal which was subject to fairly wide fluctuation during the year 1950. For dollar exchange the rates varied between Riyals 3 1/2 and 4 3/4 to U.S.$1.

At the present time there are no restrictions on the transfer of funds abroad.

SYRIA

The currency is the Syrian Pound and the official exchange rate for the United States dollar is fixed at Syrian Pounds 2.19 to U.S.$1. There is also a free market in which exchange rates are subject to wide fluctuation. The most recent quotation for the dollar in this market was about Syrian Pounds 3.50 to U.S.$1.

Export of capital from Syria by transfer of any foreign currency is under control of the Exchange Board to which such supporting evidence as the Board may demand must be submitted with the application for official exchange. Approved banks, which are designated yearly by the Board, are authorized to sell the official exchange on the strength of a permit issued by the Exchange Board.

The opening of accounts for non-residents is also subject to approval of the Exchange Board and if permit is granted, the account must be carried at an approved or authorized bank.

All debits to such accounts must be licensed except those involving the following:

1) for payment of merchandise purchased in Syria or for debts to residents,

2) for the purchase of foreign currency if approved by the Exchange Board, and

3) for withdrawals during the sojourn of the owner in Syria.

Credit entries in accounts of non-residents may not be passed without license except those covering

1) payment of goods imported to Syria under license which provides for this mode of payment,

2) payment of debts of residents contracted prior to December 3, 1938, or if since that date subject to licensing by the Exchange Board,

3) the equivalent of foreign exchange sold to the Exchange Board, and

4) deposits by the account owner himself.

The opening of security accounts for non-residents is also subject to approval of the Exchange Board.

All exports and imports must be licensed, and in the case of imports official exchange to pay for the goods can be purchased only with a permit issued by the Exchange Board in accordance with the available supply. The validity of a license covering imports from the United States is 4 months, but extensions may be granted by the Authorities upon proper justification. The exporter may use free market exchange to pay for imports or cede it to other residents who can use it only for import of goods designated by the Authorities. An import license is also required when free market exchange is used to pay for the merchandise.

Travelers, whether resident or non-resident, upon entering or leaving Syria must declare at Customs such capital assets as are carried with them. Travelers are not authorized to import in the form of bank notes or coin any sums in excess of the limit fixed by the Exchange Board. All foreign currency or other assets declared at point of entry are noted in the passport and if when leaving the country, the traveler's holdings are in excess of that declared when entering, he must produce a permit from the Exchange Board. If there is a shortage, it must be supported by evidence of sale to an approved bank.

TURKEY

At the end of 1950 the official rate for the United States dollar was Turkish

Pounds 2.80 per U.S.$1.

The purchase of United States dollars against local currency is subject to approval of the Exchange Control Office. An exchange permit is generally issued by the Authorities for payments arising from services, such as commissions, freights, insurance, etc., in connection with normal business transactions.

Income from or the proceeds from the redemption of foreign-owned securities held by Turkish banks, proceeds of the sales of such securities or of foreign-owned real estate or other capital assets are paid to the Central Bank of Turkey for credit to a blocked account until approval is granted by the Authorities to transfer the funds abroad.

Accounts may be opened for non-residents in local currency, and balances therein may be used without permission except in the case of conversion of funds into United States dollars as indicated above.

In order to import goods into the country, the Turkish importer must apply in advance to the Central Bank of Turkey for the allocation of the required exchange. Once this allocation has been granted, the importer is at liberty to request his bank to establish a documentary letter of credit to finance the shipment. If paid for against documentary draft, the relative documents are delivered usually on payment accompanied by the Foreign Exchange Allocation Certificate issued by the Central Bank of Turkey. Documents may also be delivered to the drawee against an equivalent deposit in local currency if the Turkish bank is so authorized by the remitting bank. The deposit, however, is held in a blocked account in favor of the exporter until the Allocation Certificate is delivered to the collecting bank by the drawee. The system of issuing provisional import licenses of 45 days duration subject to proof of issuance of United States export license has been discontinued.

Non-resident travelers upon entering the country must declare the amount of foreign currency in their possession in bank notes or travel instruments. On leaving the country, they are permitted to take out the unused balance.

FAR EAST AND PACIFIC

AUSTRALIA

At the end of 1950 the official exchange quotations by Australian banks were as follows:

1 Australian Pound could be purchased for U.S.$2.2425
1 Australian Pound sold would produce U.S.$2.2275

Foreign exchange dealings are subject to license, and the control is administered by the Commonwealth Bank of Australia which is the central bank. Commercial banks act as agents for the Exchange Control, and it is a basic condition that all dealings are confined to banks. Forward operations are permitted only for genuine trade transactions where a definite exchange risk is being carried by the Australian exporter or importer. Foreign exchange acquired by residents must be sold to a bank within stipulated periods.

Accounts of non-resident banks may be used freely for effecting approved payments to and from the country in which the non-resident bank is located. Exchange control approval is necessary, however, for all entries over accounts of non-residents other than banks.

Applications for capital transfers to the United States arising from the sale of securities, real estate or other capital assets, although not normally approved, will receive special consideration according to individual merits. Applications for foreign exchange covering any type of current income, such as dividends, profits, interest, etc., due to persons resident in the United States, usually receive favorable consideration. Approval is normally granted for remittance of legacies to permanent residents of the United States up to a limit of the dollar equivalent of Pounds Sterling 500, provided (1) the legacy is from the estate of a person who prior to his death was a permanent resident of Australia and (2) the funds have recently become available for distribution. Provided the relative agreements have been submitted to and approved by the Exchange Control, approval is normally given to transfer royalties or funds representing payment for services.

Import and export transactions with the United States must be licensed. Applications for import licenses for goods to be shipped from dollar areas are subject to rigid scrutiny, and generally the issuance of licenses is being limited to goods considered essential to the Australian economy. The issuance of an import license does not necessarily imply that the exchange to pay for the import will be forthcoming, but in view of the present policy of restricting imports to actual needs of the country's economy, it seems probable that exchange will be allocated for any imports covered by a license.

Travelers may bring in Australian currency notes and actual United States currency without limitation. The holdings are declared upon entry, and a copy of

the declaration is given to the visitor to serve as authority for the export of funds upon his departure. However, without formal approval the traveler may not take out local currency notes and coin in excess of Australian £10.

BURMA

The unit of currency is the Rupee which has a current value of approximately U.S.$0.21. All dealings in foreign exchange, except in cases where the import or export license has been lodged with a bank authorized to deal in foreign exchange, require the prior approval of the Exchange Controller.

A system of import licensing is in force similar to that followed in India. Some items are free of restriction under open general licenses, but all imports from the United States require an import license. Most imports into Burma are financed by the usual bankers commercial letters of credit and this is the recommended procedure for shipments to this area. Merchandise once landed is generally not allowed to be re-exported.

All exports from Burma are controlled by the license system. Exporters are not permitted to retain the foreign currency proceeds of shipments.

Subject to the approval of the Authorities, non-residents may maintain accounts with banks in Burma. Except in isolated cases, operations over such accounts require the prior approval of the Authorities.

Travelers entering Burma may take with them United States dollar funds in the form of travelers checks or travelers letters of credit without limitation.

CEYLON

The unit of currency is the Rupee which has a current value of about U.S.$0.21.

All remittances in foreign currency require the prior approval of the Ceylon Exchange Control.

No goods may be imported from the United States without an import license and if landed without a license are liable to confiscation. Import licenses for goods in respect of shipments from the United States are very difficult to obtain. For import control purposes articles have been divided into three categories, as follows:

1) Those which are prohibited from any country whatsoever.

2) Those which are prohibited if they originate from Canada or any territory not forming part of the British Empire. Items originating in Empire territories other than Canada are regulated by import licenses.

3) Those which are permitted subject to import license, irrespective of the country of origin.

For all goods requiring import licenses and not covered by an open general license, an individual import license is necessary and must be obtained before an order is placed. Import licenses are usually stamped on indents in quadruplicate, two of which are returned to the importer: one to be sent to the supplier and the other for production to the Customs on arrival of the goods. The issuance of an import license carries with it the right of the importer to apply to an approved bank for the relative foreign exchange. It should be noted that although articles may appear on the exempt list, the prior approval of the Controller of Exchange is required for their importation if they are of foreign or Canadian origin. Failure to have this approval may result in the necessary foreign exchange being refused. Recent advices indicate that all imports into Ceylon are financed by bankers commercial letters of credit.

In general, export licenses are required for all commodities, although there are a few for which no license is required. Exporters are not permitted to retain the foreign currency proceeds of their shipments. The proceeds must be turned over to the Authorities within 6 months of export.

Non-residents may maintain bank accounts in Ceylon subject to approval of the Controller of Exchange. Payments from such accounts to residents in Ceylon for amounts not exceeding Rs.500 and deposits, representing dividends and interest on securities, may be made without the approval of the Authorities. However, all other transactions require the prior approval of the Ceylon Exchange Control as is the case in remitting the proceeds arising from the sale of foreign-owned assets.

There is no restriction on the amount of foreign funds a traveler may carry with him when entering Ceylon in the form of travelers checks, travelers letters of credit or United States currency. However, holdings of currency notes and coins should be declared to the Customs upon entry, otherwise difficulty may be experienced when leaving the country.

ETABLISSEMENTS FRANCAIS DE L'INDE (Pondicherry - See France)

ETABLISSEMENTS FRANCAIS DE L'OCEANIE (Tahiti - See France)

FIJI

Fiji £ = U.S.$2.535.

Exchange control is based on regulations in force in the United Kingdom. Import licenses are required for all goods from countries outside the Scheduled Territories and in a few cases, according to national needs, for goods from countries included in the Scheduled Territories. Otherwise, a system of

open general license for some goods from Scheduled Territories is in force. Export licenses are also required.

HONGKONG

The unit of currency is the Hongkong Dollar, based on sterling at a rate which may fluctuate between 1 shilling 3 1/32 pence and 1 shilling 2 27/32 pence which, at the present United States dollar-sterling cross rate, gives a value of about U.S.$0.175. More important than the official rate, so far as United States dollars are concerned, is the rate quoted in the open market which operates quite freely and legally. During 1950 open market rates were quoted as high as HK$6.65 and as low as HK$5.96 to U.S.$1 and at the year end the rate was HK$6. Aside from the open market in United States dollars there is little interest in other currencies.

Hongkong's Exchange Control is based on the United Kingdom Exchange Control with certain slight variations to permit the continuance of the entrepot trade which accounts for about 90% of the total. In general, the Authorities permit imports freely, provided importers obtain their own exchange; little official United States currency exchange is given, although bona fide American companies with head offices in the United States are given exchange for profits and dividends, shipping companies operating American vessels receive official exchange for freight earnings from this port and American film companies get a certain amount of official exchange on a graduated basis, depending upon the spread between the official and the open market rate for dollars. As from June, 1950, all financial transactions for any amount between Hongkong and the Scheduled Territories have required the prior approval of the Exchange Control, unless the bank is satisfied that they are in respect of:

a) Bona fide imports into Hongkong from other Scheduled Territories or bona fide exports from Hongkong to other Scheduled Territories.

b) Dividends and interest payments.

c) Banks may pass sundry small bank charges without reference. Banks are required to obtain permission from the Exchange Control to open accounts for non-residents. Regulations covering the conduct of such accounts are similar to those applied by the Bank of England.

With the exception of a small list of items, either under world allocation or in short supply in Hongkong and the British Empire, imports are under general license. Other than on spirits, tobacco, pharmaceutical and American motor cars, there is no import duty. Only a few items, such as narcotics, gold and firearms are prohibited. Exports are relatively free with the exception of a few items which may be prohibited for reasons of short supply or political considerations. Exporters to United States dollar areas are permitted to sell the proceeds of their export bills in the open market with few exceptions.

With regard to the majority of exports of China origin to the United States, its possessions and the Philippines, exporters are ordinarily permitted to retain all the foreign currency proceeds. Important exceptions are woodoil on which the Control insists on a surrender of 15%; on tin, lead and silver 25% must be surrendered. All exports originating in other Scheduled Territories or in any country other than China and Korea can be re-exported, provided only that all the foreign currency is surrendered. In this way Hongkong helps to maintain exchange and export controls in other parts of the sterling group.

Exchange and import regulations are subject to change and it is recommended that exporters insist upon irrevocable confirmed letters of credit to cover their shipments.

INDIA

The Rupee is the unit of currency and it has a value of approximately U.S.$0.21.

The Government through the Reserve Bank of India exercises a strict exchange control, based on United Kingdom procedure. Subject to certain restrictions, Exchange Banks can settle forward exchange contracts with customers. The Reserve Bank of India is the control agency for the Government relative to exchange.

Remittances from India

1) Remittances covering savings, insurance premia, support of families abroad, etc., by foreign individuals resident in India, have been allowed by the Control in the currency of the national's country in amounts considered reasonable by the Control which bases the amounts granted on the individual's income in India.

2) The Control has permitted the remittance of dividends of locally incorporated companies to foreign holding corporations. However, Indian law limits dividends of public limited liability companies (no limitation, however, for private limited liability companies at present) to the average annual amount during the two-year period commencing April 1, 1946, to March 31, 1948, or 6% of paid-up capital, whichever is higher.

3) Branches of foreign firms have been allowed to remit profits.

4) The Control in considering remittances of dividends and interest on shares and securities in India held by private individuals resident outside the country considers the nationality of the owner, the length of residence outside India and the reasons for residing abroad.

5) Remittances of a capital nature to purchase securities, properties, annuities, etc., are prohibited. Similarly, applications for transfers of a capital nature, such as the sale proceeds of shares, property, etc., will not ordinarily be allowed, even to foreign nationals resident in their own countries.

Prior approval of the Control is required for the five types of remittances listed above.

Remittances to India from abroad

1) No prior approval to make payment is required by the Control for rupee or other sterling area currency items if covering (a) exports from India, (b) miscellaneous items below Rs.20,000 or £ 1,500 and equivalent (unless purpose is for capital investment) or (c) interbank transfers in rupees between two bank accounts of the same monetary area.

   Prior approval is required for (a) miscellaneous items over Rs.20,000 or £ 1,500 and equivalent and (b) for purposes of investment in India. It is recommended that for rupee and sterling currencies the remitter inform the paying bank as to the purpose of payment.

2) For incoming payments in other foreign currencies (outside the Scheduled Territories) no prior approval is necessary to effect payment, but the Control requires the Exchange Banks to convert the amounts into local currency. If a resident foreigner wishes to receive payment in foreign currency, he must apply to the Control.

IMPORT REGULATIONS

All imports must be covered by individual import license or open general license. Both types automatically entitle the importer to purchase the relative exchange. No prior approval by the Control is necessary for remitting payment if the collecting bank in India has the shipping documents except in the following cases:

1) Shipments made under individual licenses marked "CG" (i.e., Capital Goods), "HEP" (i.e., Heavy Electrical Plant) or "CGPW" (i.e., Capital Goods Post War). However, banks before opening import letters of credit against such licenses obtain the Control's approval, thereby obviating the need of prior approval for remittance when the documents arrive.

2) In cases, either under individual or open general licenses, wherein the exporter is located in one country (other than the United Kingdom) and the goods are shipped from or originate in another country.

3) Where remittances are to be made in any other currency than the currency of the exporting country. (Sterling payments are, however, permitted both to soft and hard currency areas.)

Advance payments against import licenses is refused by the Control. Exceptions are sometimes made where essential capital goods (more particularly heavy machinery) are involved, and the foreign manufacturer will not start production without an advance payment of part of the cost.

Open general license is applicable only to shipments from the soft currency area, and the number of items is severely restricted. For goods not included thereunder the importer must apply for individual licenses which are seldom granted for exports from the hard currency area, unless the goods are not available elsewhere and are considered essential for India's economy. The prohibited list of merchandise is extensive and includes grain and flour, although for these two commodities the Government itself does the foreign purchasing.

The situation is most unsatisfactory in cases where goods are imported without a license or without an adequate license or are on the prohibited list. There is danger of confiscation and while in theory the merchandise can be re-exported, in practice this is difficult if not impossible. In some cases, more particularly for goods from the soft currency area, the Customs allow importation against payment of very heavy fines, in which case the Control may or may not grant the exchange. If the goods are not cleared promptly, the port authorities may sell the merchandise to cover duties and charges. Consequently, the best assurance to exporters abroad of avoiding difficulty is to insist on the establishment of irrevocable letters of credit.

EXPORT REGULATIONS

The export controls are strict and subject to change from time to time. At present only a few important products can be exported freely, such as cashew nuts, coir products and cotton waste. Most commodities are subject to licensing and quota arrangements, and the regulations often favor shipments to hard currency areas. Exports of certain commodities are prohibited, such as the better grades of raw cotton.

NON-RESIDENT ACCOUNTS

Prior approval of the Control is necessary to open a non-resident account, and in practice it is found that the Control requires prior approval of virtually all entries over the account. In cases wherein part of the signers on an account are non-resident and the others are resident, the Control treats the account as non-resident only as regards the operation of the signers abroad.

NOTE: Even resident accounts of foreign nationals are subject to certain restrictions by the Control.

TRAVEL FUNDS

Travelers coming to India are strongly advised to bring an ample supply of travelers checks. These are preferable to travelers letters of credit if a person is traveling extensively in the interior. Travelers have no difficulty in bringing travelers checks and travelers letters of credit into and out of India. When instructions are received from abroad by a bank in India to issue travelers checks or travelers letters of credit to a traveler, the delivery can be effected with nominal control formalities if the person is not an Indian national.

Currency notes must be declared on a Customs form when a traveler enters the country, and when he sells the notes, he should have the relative authorized exchange dealers endorse the sale on the form which is to be presented to the Authorities upon leaving the country. Recently the Authorities have allowed American travelers to bring in fairly substantial amounts of United States currency notes, but as regulations vary from time to time, we recommend that travelers restrict the amount of currency notes to a minimum. Regarding sterling notes and the notes of sterling currency countries, travelers at present can bring in only £5 or the equivalent. Travelers can sell foreign funds only to authorized dealers, i.e., Exchange Banks and specially licensed money changers. Hotels are not authorized dealers nor are they allowed to accept foreign funds in payment of hotel bills.

INDOCHINA

The unit of currency is the Indochina Piaster. Foreign exchange obtained in the free market may be used for all import transactions involving the following currencies: Belgian, Djibouti and Swiss francs, Canadian and United States dollars and Portuguese escudos. These are the currencies traded in on the free market in Paris.

In Indochina the Paris free market actually represents the official rate. On the basis of the present rate of Fr. Frs. 350 equals U.S.$1 and Fr. Frs. 17 equals Piaster 1, the resultant local rate is Piasters 20.588 equals U.S.$1. All transactions in foreign currency are subject to the prior approval of the Exchange Office of Indochina.

In general the import and export licensing system in Indochina is based on the procedure followed in Continental France.

INDONESIA, REPUBLIC OF

The unit of currency is the Guilder and the official rate is Guilders 3.80 to U.S.$1.

The multiple system of exchange rates is employed in Indonesia on all export and import items. The foreign currency proceeds of all exports from Indonesia must be surrendered to an Authorized Exchange Bank for which the exporter receives the official rate plus 50% (in special cases 100%) in negotiable certificates. These certificates are valid for 30 days and may be disposed of at an Authorized Bank. The present buying rate for such certificates is Guilders 1.99 per guilder certificate. In paying for imports, in addition to the guilder amount calculated at the official rate, the importer must produce certificates, for the equivalent in guilders computed at the Authorized Bank's selling rate, for 100% (in special cases 50%) of the exchange required. Certificates for this purpose are presently selling at Guilders 2.00 per guilder certificate. Applying the foregoing, the effective rate in January, 1951, for exports is U.S.$1 = Guilders 7.56 and for imports U.S.$1 = Guilders 11.43.

Imports are under strict governmental regulation, and a purchase license must be obtained before an importer may apply for the necessary foreign exchange license. The method of financing imports is principally left to arrangements agreeable to the importer and exporter with the one restriction that payment may be effected only after the financing bank in Indonesia, or its correspondent abroad, has received concrete evidence that the merchandise described in the relative foreign exchange license has been dispatched to Indonesia. Because of this restriction it is the customary and recommended practice to have all shipments financed by the usual irrevocable letter of credit. Shipments may be made without a letter of credit, but it should be borne in mind that the importer must obtain an exchange license before he can apply for the necessary foreign exchange. We recommend that this be ascertained before making shipment.

All exports to the United States must be financed under irrevocable documentary letters of credit providing for drafts to be drawn thereunder with a usance not to exceed 7 days sight. Exports are not allowed to be invoiced in guilders (without special license of the Foreign Exchange Control Board) and should be invoiced in the currency of the country of destination.

Bank accounts may be maintained by non-residents upon approval of the Authorities, and all subsequent transactions are subject to their supervision. Proceeds arising from the sale of foreign-owned assets in Indonesia can be remitted only after obtaining a special license from the Foreign Exchange Control Board. Before disposing of such assets, it is recommended that the approval of the Authorities to do so be obtained first. On the granting of this approval, application to remit the proceeds may be made to the Foreign Exchange Control Board.

Persons visiting Indonesia are not permitted to import Indonesian currency without a special license approved by the Foreign Exchange Control Board. There is no limit on the funds a traveler may take in with him in the form of travelers letters of credit, travelers checks and/or foreign currency, providing his stay does not extend over a period of 3 months. Such funds must be declared when entering the country.

JAPAN

The unit of currency is the Yen and the official rate is ¥360 equals U.S.$1.

The Foreign Exchange Control Board has established the following rates of exchange for use of the Foreign Exchange Banks:

Buying	Selling
¥ 358.45 = U.S.$1	¥ 361.05 = U.S.$1
¥1,003.66 = £1	¥1,010.23 = £1

Effective as of July 1, 1950, all non-occupation personnel in Japan were placed on a yen basis. United States dollar and sterling balances on the books of local banks in the names of such individuals and business organizations were required by order of the Minister of Finance to be converted to Convertible Yen Accounts or remitted out of the country prior to July 31. Dollar and sterling balances not converted prior to July 1 have been blocked until such time as application is filed for a Convertible Yen Account.

Convertible Yen, so-called, is represented by balances on the books of local banks derived from the proceeds of dollar and sterling remittances from outside Japan or deposits of Convertible Yen checks circulating in the form of "order" checks; such checks retain their convertibility when deposited by the payee into his own Convertible Yen Account. The convertible privilege is lost when such checks carry endorsements in addition to that of the original payee.

Arrangements have been made for two types of convertible accounts. Convertible A Accounts represent the proceeds of dollar conversions and may be remitted from the country in the form of dollar instruments. Convertible B Accounts represent the proceeds of sterling conversions and when remitted abroad are in the form of sterling instruments.

Imports into Japan are subject to license. The importer must submit an application to the Ministry of International Trade and Industry (MITI) for an import permit. The Foreign Exchange Control Board will only grant the relative foreign exchange upon production of the MITI import permit. Exports are also subject to a MITI license, and all exchange received from exports must be paid to the Foreign Exchange Control Board.

Bilateral trade agreements have been entered into between Occupied Japan and some twenty foreign countries. By the terms of these agreements Japan imports needed raw materials and exports manufactured goods.

A Foreign Investment Law has been passed for the purpose of encouraging foreign firms to invest in Japan and provides for the remittance of profits abroad in approved cases. The policy will be to give every encouragement to foreign investment which will contribute to the development of the Japanese economy.

The Government is now planning the establishment of an Export Bank with a

capital of ¥15 billion. The purpose of the bank will be the encouragement of exports through the extension of financing to manufacturers for the production of goods for export.

Japanese Overseas Agencies have been established under direct control of the Japanese Foreign Office to exercise limited trade promotion and quasi-consular functions in New York, San Francisco, Los Angeles and Honolulu. Permission has also been obtained from SCAP for the establishment of further agencies in the following cities: Paris, Rio de Janeiro, Stockholm, New Delhi, Calcutta, Bombay and Karachi.

Any one coming to Japan on business or pleasure should carry his funds in the form of United States dollar letters of credit and/or travelers checks. Such travel funds may be carried into the country and retained without limitation but must be declared on entering the country. United States currency notes may also, for the present, be brought in without restriction subject to declaration at time of entry. We would, however, recommend that the amount of currency notes be kept at a minimum.

NEW CALEDONIA (See France)

NEW HEBRIDES (See France and Pacific Islands)

NEW ZEALAND

At the end of 1950 the official exchange quotations by New Zealand banks were as follows:

1 New Zealand Pound could be purchased for U.S.$2.7991
1 New Zealand Pound sold would produce U.S.$2.7586

All remittances from New Zealand must be approved by the Minister of Finance who has delegated authority to the Reserve Bank to which all applications are addressed. In practice, applications are submitted through commercial banks and the Post Office. Forward operations in foreign exchange covering genuine trade transactions are permitted with a maximum period of 6 months.

Accounts may be opened in the name of non-residents, but transfers out of such accounts may be made only with the approval of the Reserve Bank if the funds go beyond the Dominion. Income arising in New Zealand on securities in the Dominion owned by persons resident abroad together with the proceeds from redemption may be remitted to the country concerned, provided the owner is permanently resident in that country. At present, however, the Reserve Bank is not prepared to authorize remittance of the proceeds from the sale of New Zealand securities to persons resident outside the Scheduled Territories. The same is true of the proceeds from the sale of other capital assets except in the case of the remittance of proceeds from the sale in New Zealand of the

house and furniture owned by the non-resident up to £5,000 or the amount expended on the purchase of the property which may be approved under certain circumstances.

Exports and imports are subject to license. The issuance of an import license carries with it permission to secure the foreign exchange required to pay for the goods. A New Zealand exporter may not retain the proceeds of exports nor can he hold such funds to be used as offsets for goods coming into the country. Instead exports and imports must be dealt with separately.

Imports not entered at Customs may be re-exported under transshipment without penalty as to payment of duty and without requiring an application for permit. If the duty has been paid, an application may be filed for refund. When the need for re-export stems from non-payment of the relative draft, there would be no objection to the shipment and normally the permit would be granted.

Travelers entering the country may carry United States dollars with them in actual currency, letters of credit and travelers checks without limitation, and it is not necessary to declare the holdings. There are no restrictions on travelers taking the unused portion of such funds with them when departing. Normally there is no limit on the amount of New Zealand currency travelers may bring into the country, but if the amount is substantial, it will be necessary to satisfy the Reserve Bank that the notes were acquired through normal banking channels. Carrying New Zealand bank notes out of the country in excess of £5 is prohibited, unless the traveler is proceeding to the United Kingdom.

NORTH BORNEO

Straits $ = U.S.$0.332.

Exchange control is based on regulations in force in the United Kingdom.
All goods are subject to import license, with the exception of many United Kingdom goods which qualify for open general license facilities.
Export licenses are required in some cases.

PACIFIC ISLANDS (Gilbert & Ellice Islands, Br. Solomon Islands, Tonga, New Hebrides and Pitcairn)

Australian £ = U.S.$2.24.

Exchange control is based on regulations in force in the United Kingdom.
Import licenses are required for all goods from other than the Scheduled Territories and in all cases, according to national needs, for goods from the Scheduled Territories.
Export licenses are also required.

PAKISTAN

The currency unit of Pakistan is the Rupee. The par value as against the British pound sterling is about two shillings two and one half pence. One Pakistan rupee is worth about U.S.$0.30 1/4.

Pakistan is one of the Scheduled Territories, and its foreign exchange regulations are based on those prevailing in the United Kingdom.

Banks in Pakistan are not permitted to grant loans or overdrafts to overseas borrowers without the prior permission of the Exchange Controller.

As to the import and export of currency notes, it is permissible to bring in or take out of Pakistan, Pak.Rs.50 at any one time, but foreign currency notes, excluding Indian, may be imported without limit. However, only the equivalent of Pak.Rs.50 may be exported. Travelers from the United States may bring funds in the form of travelers letters of credit or travelers checks without limitation. Such holdings must be declared at the time of entry.

Import licenses are required for imports. Currently, only such articles as machinery, chemicals, medicines and some types of motor vehicles are freely licensed. The best assurance an exporter has that all requirements have been complied with is the establishment of an irrevocable letter of credit.

Theoretically, merchandise if bonded may be re-exported, but the Government retains the right to prohibit the re-export of articles which it considers of urgent need. If the import duty has been paid, only seven-eights of the amount paid is recoverable in the event of re-export.

Non-resident bank accounts may be opened in Pakistan only with the prior approval of the Exchange Control Authorities.

PAPUA

Australian £ = U.S.$2.24.

Exchange control is based on regulations in force in the United Kingdom.
Import licenses are required for all goods from countries outside the Scheduled Territories. No licenses required for imports from the Scheduled Territories.
Export licenses are also required.

PHILIPPINES

The unit of currency is the Peso which has a current value of approximately U.S.$0.50.

All transactions in foreign exchange are subject to licenses issued by the Central Bank and must be effected through an Authorized Agent (banks licensed to do business in the Philippines). No forward operations are permitted.

Fixed deposits and current and savings accounts in pesos may be opened in favor of non-residents but are subject to prior approval by the Central Bank. The following types of credits to non-resident accounts (other than banks) are permitted without prior approval by the Exchange Control Office:

1) Transfers from the account of a non-resident bank.

2) Dividends and interest on securities owned by the holder of the account.

3) Refunds of amounts previously debited or overcharged.

4) Proceeds of small checks, provided the aggregate credits during a calendar month do not exceed ₱1,000 and no individual credit is in excess of ₱400.

5) Balances of a non-resident switch transaction or proceeds of the sales of securities approved by Authorized Security Dealers (institutions, companies and firms appointed by the Central Bank).

The following types of debits to non-resident peso bank accounts (other than banks) are permitted without prior approval by the Exchange Control Office:

1) Local payments for postal and telegraph charges, stamp fees, storage and safe custody charges, payments to servants, insurance premia, taxes, allowances to relatives, minor repairs to houses and other local payments, provided the aggregate debits during a calendar month do not exceed ₱2,000 and that no single payment is in excess of ₱200.

2) Debits in reversal of previous credits.

Accounts designated in foreign currencies opened prior to exchange control, and all interest earned thereon, may be liquidated without the prior approval of the Exchange Control Office but only against payment in pesos. Payments of foreign exchange in settlement of such accounts will not ordinarily be allowed by the Central Bank.

Subject to the foreign exchange position of the Central Bank at the time application is made and in accordance with the merits of each case, the Central Bank may:

1) Permit firms to transfer abroad earnings and/or capital up to 30% per annum of their capital investment in the

Philippines as of December 31, 1949. Capital investment for this purpose is considered as fixed assets or capital stock outstanding, whichever is larger. In the case of corporations, the percentage of fixed assets to be considered as capital investment is in relation to the foreign participation in the capital stock; in the case of companies and other firms, in relation to the foreign participation in the organization. Earlier a Central Bank ruling limited the remittance of profits and dividends to 10% of the net profits after taxes or to 10% of the capital stock, whichever is higher, provided, that in no case could such remittances exceed the average amount of profits and dividends remitted in the previous two years.

2) Permit proceeds from the sale of securities, real estate or other capital assets, prewar commercial debts owed to non-residents, royalties, inheritances and payment for services to be licensed for remittance on the basis of periodic installments.

3) Permit intending emigrants to be licensed to take a portion of their assets in United States dollars at the time of departure, the remaining balance, if any, to be remitted in periodic installments.

All imports and exports are subject to license and must be coursed through the medium of an Authorized Agent of the Central Bank.

Republic Act No. 426 - An Act to Regulate Imports and for Other Purposes - was approved by the President on May 22, 1950, and repealed previous import control laws. Pertinent features are:

1) Importers are required to file an application for a quota allocation against which licenses may be issued. For an old importer the application must be executed under oath and shall contain, along with other information, his name, address, nationality, a statement of the quantity on hand of the goods applied for, and the amounts imported by him during 1946, 1947 and 1948. If a new importer, his application must contain a statement of his financial resources.

2) From time to time the Central Bank certifies to the Import Control Board the amount of exchange available for import purposes for any specific period. The former grants exchange to cover all licenses duly issued by the latter, but all import and exchange licenses are revocable at any time.

3) All imports are controlled and are classified under two categories - items subject to quota allocations and those not subject to quota allocations. The former is further divided into four groups: prime imports, essential imports, non-essential imports and luxury imports. Imports to be admitted without quota include: (a) raw materials for commodity manufacture; (b) supplies and equipment for the armed forces and government hospitals; (c) articles, goods and commodities bartered with Philippine products except luxury imports; (d) goods for religious rites and ceremonies; (e) articles and goods for personal use, provided no foreign exchange is used and (f) goods intended solely for rent, lease or exhibition, provided that at least 25% of the gross rental, royalties and earnings paid therefor shall not be allowed for remittance abroad.

4) The Import Control Board shall reserve 30% of the total import quota for any merchandise for the fiscal year 1950-51, 40% for 1951-52 and 50% for 1952-53 in favor of bona fide new importers who did not import during 1946/48. The new importers must be Filipino or American citizens or entities of which at least 60% of the stock is owned by Filipino or American citizens.

5) Quota allocations are based on the average annual CIF values of importations in the years 1946-48. Non-quota imports may not exceed 1948 import values except agricultural machinery, materials and equipment for dollar-producing industries.

6) Quota allocations of any importer for any particular article are not transferable.

After obtaining the necessary import license from the Import Control Office, the importer must present it to his bankers who are then authorized to arrange for the payment abroad of the foreign exchange. Ordinarily this is done by opening a commercial letter of credit or an authority to purchase. Alternatively, the importer may present his import license to the Central Bank and apply for a license for his bankers provisionally to remit the foreign exchange abroad by telegraphic transfer or demand draft on the condition that final payment will not be made to the exporter until certain documents are presented evidencing that shipment has been made to the Philippines. These documents may be presented to his bank in the Philippines or to his bankers' correspondent abroad. The intention of the Central Bank in issuing licenses to make these conditional payments is to permit a modified open-account transaction, subject to certain documentary limitations; hence the documents presented are not required to conform to usual letter of credit standards.

Acceptance of a provisional deposit (equivalent in local currency) with respect

to United States dollar documentary collection is not legally mandatory.

Imports from the United States are duty free, but on all imports to the Philippines there are taxes collected from the importer prior to release of the relative merchandise by the Customs Authorities. Sales tax on luxuries range from 50% to 75%; on semi-luxuries 20% to 30% and on necessities 7%.

All goods, merchandise or commodities shipped out of the Philippines must be declared for export, and either the approval by the Exchange Control Department of the Central Bank or the endorsement of an Authorized Agent (bank licensed to operate in the Philippines) must be secured.

No goods may be sent abroad (1) which are not covered by a draft drawn in United States dollars representing the full value of the exports and (2) unless the collection of the proceeds of the sale of such goods is to be undertaken by or entrusted to a bank licensed to do business in the Philippines.

The following regulations must be observed:

a) Shipping documents must be coursed through, or entrusted to, a bank authorized by the Central Bank to deal in foreign exchange;

b) Payment for the goods, merchandise and/or commodities must be received within a period of 90 days from the date of the shipment, unless the Central Bank grants an extension of time for such payment, and

c) Payment must be effected by drawing bills in United States dollars on banks or firms wherever located outside the Philippines.

d) Additionally, all exports of copra and coconut oil must be covered by irrevocable bank letters of credit with drafts drawn at sight.

The following articles are exempted from export regulations and, therefore, no application for an export license need be submitted for approval:

1) Personal effects accompanying outgoing passenger.

2) Household effects accompanying a traveler where the value does not exceed ₱500.

3) Articles purchased by a tourist and shipped out as part of the personal baggage and effects of such traveler upon departure.

4) Household and personal effects belonging to foreign diplomatic representatives or such other personages who

travel under diplomatic passports.

An exporter cannot retain the foreign currency proceeds of his exports.

As a matter of policy, the Government does not allow the re-exportation of merchandise.

A traveler entering the Philippines may bring in Philippine currency in an amount not exceeding ₱100 and may take with him on leaving the country a like amount without the prior approval of the Exchange Control Department of the Central Bank. An excess of ₱100 is prohibited, unless approved by the Central Bank.

Visitors are required to declare their foreign exchange holdings upon entering the country and during their stay must sell such foreign exchange as is required for current spending to an Authorized Agent. Unexpended Philippine currency not exceeding 50 pesos (₱50.00) can be exchanged for foreign currency by an Authorized Agent without the prior approval of the Central Bank. At the time of his departure, the traveler must complete his declaration on a form prescribed by the Central Bank showing the amount of foreign currency, coin or travelers checks sold to Authorized Agents during his stay and the amount he is taking with him, and must surrender this declaration to the Customs Authorities at the port of departure. The declaration form includes a certification by the visitor that all sales of foreign funds during his stay in the Philippines have been made to an Authorized Agent.

PORTUGUESE CHINA (Macao)

The unit of currency is the Pataca and while subject to fluctuation has a present value of about U.S.$0.17 5/16.

The Banco de Portugal in Lisbon exercises control over all exchange matters, but generally there are no specific restrictions. Current accounts can be opened by non-residents, and income and the sale proceeds of assets can be remitted. Macao being a free port, there are no import regulations except for the importation of ammunition, gold and platinum which are subject to license. There is no limitation on the amount of foreign currency a visitor may bring with him. Visitors may only remain in the Colony 7 days except with prior approval of the Authorities.

PORTUGUESE INDIA (Goa)

The unit of currency is the Rupee which has a current value of about U.S.$0.204.

Funds may be remitted freely to India from Portuguese India, but sums of Rs.50.000 and above must be accompanied by a declaration stating the name of the remitter and the purpose. All remittances in sterling require approval of the Reserve Bank of India, Exchange Control Department. Remittances in all other

currencies require the approval of the Banco de Portugal in Lisbon. Effective from January 1, 1951, all imports from foreign countries require prior governmental approval.

Accounts may be maintained by non-residents and operated without restriction. However, in making remittances abroad the regulations mentioned above are effective.

Travelers are permitted to enter and leave the country with United States dollar letters of credit or currency with no limitation as to amount. It is not necessary to declare such holdings at any time.

SARAWAK

Straits $ = U.S.$0.332.

Exchange control is based on regulations in force in the United Kingdom.
Most United Kingdom goods are covered by open general license; other imports are subject to license.
Export licensing regulations to some extent follow the United Kingdom plan.

SINGAPORE - FEDERATION OF MALAYA

The unit of currency is the Straits Dollar which is linked to the pound sterling at approximately two shillings and four pence. The United States dollar equivalent of the Straits dollar is about U.S.$0.33.

All imports from countries outside the Scheduled Territories require prior import license, commonly referred to as an "A.P.". With minor exceptions, transactions relative to trade within the Scheduled Territories can be conducted without Exchange Control approval. Licenses for imports from hard currency areas are normally restricted to articles which are essential to the economy of Malaya and cannot readily be obtained from the Scheduled Territories. Before undertaking shipments to Malaya (i.e., Singapore and Federation of Malaya) exporters in hard currency areas should assure themselves that the importer is in possession of an import license, as otherwise there is a risk that importation of the merchandise and/or granting of exchange for remittance may not be allowed. For this reason it is advisable and recommended that all shipments be made under irrevocable letters of credit.

Exports to hard currency areas, whether consisting of commodities produced in the Colony or merchandise for re-export, require prior approval of the Authorities, and the full relative proceeds must be received by means of exchange negotiated through a bank.

Residents of the United States and other American Account Countries may maintain bank accounts in Singapore in Straits dollars with the prior approval of the Exchange Control. Deposits to such accounts are subject to approval of the

Authorities and when this approval is obtained, the Authorities agree to permit the use of the funds in Malaya or for remittance to the account holder without further formality. Income from investments in Malaya can be remitted abroad in this manner, while the granting of permission for the remittance of the proceeds from the sale of securities, real estate or other capital assets would depend on the circumstances governing each particular case. Remittances from abroad may be made to Malaya through banks without prior approval. Overdrafts whether clean or secured, in the accounts of non-resident individuals are normally not allowed, as is the case with respect to non-resident companies which do not maintain a branch office with capital or assets in Malaya.

Travelers to Malaya may not take in more than £5 in sterling bank notes or Malayan $45 in Malayan currency notes, but are not restricted in the amount of funds they may carry with them in the form of foreign currency travelers checks, travelers letters of credit or United States currency. Such instruments may be negotiated by banks at official rates, but the reconversion of any excess drawing to foreign currency (i.e., United States dollars or other hard currency) requires Exchange Control approval. Unless a traveler has brought the currency into Malaya and has so declared it, he is not allowed to take out of Malaya any foreign currency in cash to an aggregate value (at local conversion rate) of over S$85.

TAIWAN

The unit of currency is the Yuan, officially pegged at Yuan $5 equals U.S.$1. An open market exists with an exchange rate at present of about Yuan $10.25 equals U.S.$1.

All overseas trade is under close government regulation and supervision, and effective from January 1, 1951, all self-financed imports, unless approved by the Production Finance Committee, are prohibited. Exporters may retain 80% of the proceeds of their exports, which may be disposed of against imports by selling to importers the exchange certificates covering the exports.

Travelers visiting Taiwan are not restricted in the amount of funds they may bring with them in the form of travelers checks and letters of credit. However, when departing, the only foreign currency notes and coin which can be taken out is the amount which was declared at the time of entry and deposited with the Bank of Taiwan in safe custody during their stay in Taiwan.

THAILAND

The unit of currency is the Baht which is at times referred to as the "Tical". The official rate is Baht 12.65 5/8 equals U.S.$1. There also exists an open market rate which at present fluctuates between Baht 22 to 23 per U.S.$1.

The license system has been abolished in general, but licenses are still required for the import or export of rice, arms and ammunition, opium, ganja,

live animals, fresh and salted foodstuffs, hard wood, fuel wood, raw cotton, silk and cotton cloth, gunny bags and gold. Exporters are permitted to retain the foreign currency proceeds of their exports except those arising from the sale of rice, tin, rubber and cement. On these exports 90%, 40%, 20% and 100% respectively of the foreign currency proceeds must be surrendered to the Bank of Thailand. The customary and recommended procedure for financing imports is under bankers commercial letters of credit. Foreign exchange at the official rate is available from the Exchange Control for merchandise previously approved by the Bank of Thailand; for other imports there are no restrictions on obtaining foreign exchange from commercial banks at the open market rate.

Accounts of non-residents may be maintained by local banks and no restriction is placed on the operation of such accounts, while remittances may be made abroad at the open market rate.

Visitors to Thailand are permitted to carry funds with them in the form of letters of credit, travelers checks or foreign currency without limitation. Such holdings, however, must be declared when entering the country.

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Next 88 Page(s) In Document Exempt

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CONTENTS

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THE RESEARCH DIVISION

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THE FUJI BANK LIMITED

Established in 1880

HEAD OFFICE

1-chome, Otemachi, Chiyoda-ku, Tokyo

DIRECTORS

President:	Seiji Sako
Vice President:	Toshi Kaneko
Managing Directors:	Takehiko Nishino
	Yoshizane Iwasa
	Mitsuo Koike
Directors:	Takeo Kamio
	Toshio Sato
	Takao Makimoto
	Shozo Ota
	Goro Mizobe
	Yasuhiko Kuroda
	Juichi Mikami
	Kazuo Yukawa
Standing Auditors:	Jiro Shoda
	Takeo Ishida

BRANCHES

Totalling 186

Situated at key points throughout the country

TIME FOR ANOTHER TURN IN JAPANESE ECONOMY

1. The New Economic Situation of the World and Japanese Economy.

The outburst of Korean hostilities and shifting toward the adoption of the semi-war economy and rearmament throughout the world at this juncture have changed the key-note of Japanese economy which was about to face poignant depression due to the continual decrease of effective demands both at home and abroad, enabling Japan to mark a new turning point for the rehabilitation of her economy.

Japanese economy in 1951 is confronted by the second and perhaps the last turning period. The new development of the Korean war situation caused by the inroad of the Chinese Communist leads up to the emergency declaration by President Truman and, taking it as a turning point the world is now passing into an all-out war time economy. Would Japan be able to accomplish her work of economic rehabilitation, placed as she is to be the contact-point between the United States and Soviet Russia or is she destined to follow the path of collapse? This is a cross road upon which she now stands.

On December 16, President Truman published declaration about the emergency state of the country, distinctly stating his intention of adopting economic control system which is necessary for utilizing American economic resources to the maximum degree for the purpose of national defence. This spells that while he is pursuing his hope for peaceful solution of the trouble from military point, the state of war has been entered, economically speaking. The new world-wide situation of politics and economy could not help but having strong influence upon Japan in all the phases of politics and economy.

A. The Problem of adopting Control System again.

With the outbreak of Korean hostilities, the world economy has entered the period of "goods" from that of "money". Centering around the purchase and storage of munitions, the market has turned again to that of sellers. Particularly, since the enactment of the National Defence Production Act of America in 1950, the importation of principal goods to our country has been made rather difficult, and in addition, the prohibition of export to Communist China coupled with American declaration of emergency has made this difficulty quite decisive. The importation of such major raw materials as caking coal, iron ores, soy-beans, salt, cotton, wool and pulp has run on rock. Certainly, too much emphasis could not be attached to the importation of raw materials in a country like ours which depends upon overseas for

the 70% supply of chief raw materials indispensable for economic expansion and re-production.

While we are feeling contentment with the restoration of international trade balance brought about by the increase of exports and special procurement, there might arise for aught we know a condition under which smooth working of re-production becomes impossible due to the shortage of materials coming from the fact that the amount of dollars accumulated with such a great trouble might loose its value owing to the restriction on exportation of raw materials or even through depreciation of dollar value. The possession on hand at present of the sum of foreign money amounting to around $450,000,000 may be likened to banking deposites held by beggars. The effective use of surplus foreign money is of urgent necessity for the nonce. Acceleration of trade by private individuals and overseas activities of commercial firms must by all means be encouraged, but it must be born in mind that the Government should carry out importation under the stress of circumstances so as not to keep idle such foreign funds in its command.

The foreign telegram (dispatched on December 20, Washington A. P.) reports the statement made by Mr. Takeuchi, the Superintendent of International Trade, the Ministry of International Trade and Industry who is visiting America now to the following effect: "The American authorities promise that America will continue the supply of the materials needed for the rehabilitation of Japanese economy despite the fact that demand for strategic materials is increasing in America due to the crisis facing the world all over." Surely this promise inspires us Japanese, with courage and hope toward economic rehabilitation more than anything else, especially when we consider the fact that Japan is in the state of unstability due to her dependence upon imports of industrial raw materials as well as food-stuffs, and that she feels more keenly than ever under the present tense world conditions the fate of Japanese economy prone to be directly affected by the unstability of political and economic conditions overseas.

Even supposing that part of raw materials such as caking coal is imported from America, at this very time when America herself is controlling domestic consumption she would require our iron and copper articles in exchange for their exportation of these raw materials to Japan. Thus as long as we rely on America, if the American economic control is strengthened, the Japanese economy must naturally follow the course. That is to say, in order to secure economic stability by making good the shortage of supply due to import difficulty, there is every necessity to introduce regulation in respect of goods. It must be regarded that under these circumstances the revival of economic control is unavoidable.

This control, however, that is to be made now, unlike the one in the past war time is to be strongly governed by the shifting of economic control in America. Hence the attainment and maintenance of well bal-

anced economic structure which constitutes the content of the rehabilitation or reconstruction of Japanese economy would become very difficult.

B. Financial and Monetary Policy.

After diagnosing Japanese economy three times and taking well into consideration the new conditions prevalent subsequent to the Korean hostilities, Mr. Dodge has given us a prescription which is intensively set forth in the Budget of the year 1951. For the fiscal years of 1949 and 1950, through the financial policy of making supra-balanced budgets as the pivot, economic stabilization has been attained, but the question is whether the Budget for 1951 would be suited to lead our national economy in the new situation of politics and economy prevailing in the world.

Now let us proceed to examine the three chief points of the Budget compilation in Japanese economy, namely, economic stabilization, economic rehabilitation and social security.

Economic Stabilization.

The Budget for 1951 goes by the name of "neutral budget". The budgets in the past assumed the form of supra-balanced budget whereby redemption of national debts was carried out, but the Budget for the coming year is made in the form of plain balanced budget, and such surplus expenditures as debt-redemption are not incorporated into the budget which accounts for the name of "neutral budget". In other words, the funds for special accounts and governmental agencies are met by transferring in total the sum of ¥118,800,000,000 making balance, namely, ¥77,800,000,000 from the General Account, ¥32,000,000,000 from the Trust Fund Bureau and ¥9,000,000,000 from the Counterpart Fund. The idea seems to be that financial funds based on such calculation could be smoothly and balancedly utilized so as not to bring undue pressure upon banking.

Surely, such budget, mathematically considered, is balanced budget or "neutral budget", but when going a step further and analysis is made it will be observed that it has not quite shaken off the character of supra-balanced budget, as may be seen from the plan to practice inventory finance, i. e. appropriating from the General Account the total sum of ¥55,100,000,000 namely ¥50,000,000,000 to the Foreign Exchange Fund Special Account, ¥3,700,000,000 to Noble Metals Account and ¥1,400,000,000 to the Land Development Fund Accomodation Account. To secure financial neutrality, it is necessary, as prefigured, the excess of export should reach $150,000,000 but even in this case, if the amount be simply kept as the reserved foreign fund, it spells the keeping of idle fund in these days when the need for long term funds is most keenly felt. It may possibly imply the sense of reserve fund, but it should be more actively employed to forward the policy of strengthening the national productive capacity, at the same time rectifying the lame nature of present prosperity.

Economic Rehabilitation Expenses.

Public Works Expenses as compared with the year 1950 show an increase of ¥740,-

000,000, but shortage of funds is still felt for development of natural resources and for execution of food increase plans, as will be necessitated by the actual economic conditions of the future. The serious problem for the 1951 economy is to finance the funds needed for these purposes. Judged from the very nature of supra-balanced budget it may be a difficult problem to squeeze out these funds. This certainly presents an important national problem.

With a view to secure importation of materials of urgent necessity by the governmental trade and to enable the Government to discharge the function of stock-piling materials, the Urgent Goods Importation Fund Account has been created, but the fund amounts only to ¥2,500,000,000, by which, even if figured on the basis of 4 times rotation in a year, the business amounting only to ¥10,000,000,000could be carried out. It is reportedly said that the Western German Government is getting loans up-to-limit allowed by the European Payment Alliance after exhausting foreign money in its possession. In our case, also, positive measures should be considered to open the way for getting loans if necessary in relation to this fund.

With regard to industrial funds which do not fall under the purview of commercial basis, we find that there are established funds for agricultural, forestry and fishsheries banking, amounting to ¥2,000,000,-000, that for agricultural mutual aid to ¥2,500,000,000, and that for smaller and medium enterprises credit insurance amounting to ¥1,000,000,000 and investment to the Export Bank amounting to ¥5,000,000,-000, but it is to be regretted that in considering the future expansion of our economic deta these funds would be altogether too small. To be more specific, ¥9,000,000,000 for public enterprise investment, ¥35,000,000,000 for private enterprise investment, out of C. P. A. Fund, and ¥40,000,000,000 for accepting banking debentures out of the Trust Fund Bureau Fund making a total of ¥84,000,000,000 may be regarded as long term funds, which is an increase of only some ten billions yen compared with the past year. It is, therefore, desirable that the reservation from the Counterpart Fund be released more elastically.

Social Security.

Under this heading, we find that an investment of ¥5,000,000,000 is made to the House Loan Corporation, and that compared with the year 1950, the living protection expense was increased by ¥4,800,000,-000, the social insurance expense by ¥1,600,-000,000, anti-tubercrosis measure expense by ¥2,600,000,000 and employment measures expense by ¥1,800,000,000 besides the reduction program of income taxes, etc. However, seeing that stable food stuffs expenses are to be increased on a large scale from January coupled with a tendency for the rise of general commodities prices, and under the growing strained international circumstances, the maintenance of social order will become more important than ever. Such passive position as awaiting a favorable turn of the times for realizing social stability should be altogether

given up.

In these days, when we are moving toward war-time economy, the policy of checking inflation from the phase of currency is insufficient; we should resort ourselves to that of finding a way for increased supply of materials by enlargement of production as well as by active importation from overseas. In these two points, our financial policy should be on a large scale turned to contribute toward economic rehabilitation and reconstruction, but the Budget for the year 1951 is compiled on too conservative a base to meet such important demands.

As mentioned before, as our economic activities are constrained according to the turns taken by the American war-time economic control, and our social unrest may be expected from the aggrandizement of lame nature of our production, we should possess more positive measures relative to social security question.

And again, in our country where capital accummulation capacity is feeble and poor, there is but little inside capital reservation in enterprises. The mass of the people being with but little capacity for savings, the security market has rather the character of speculation market, and enterprises are forced to seek their capital in indirect investment through banking organs. Overloans made from banking organs in 1949 and 1950 have after all their origin in this respect. For the long term funds needed for the repletion of productive capacity and for rationalization of industries, the sum of ¥80,000,000,000 (the amount of public and private investment made out of the Counterpart fund for 1951 and the amount of accommodation loans to be accepted by the Trust Fund Bureau) is by no means sufficient so that they will necessarily have to rely upon commercial banks and other measures. Furthermore, although the 1951 Budget is a neutral one as far as its form goes, the movement of actual economic condition in the future will give rise after all to the relative shortage of the Government funds, so that there is a strong possibility that this tendency should of necessity have a resource to increase in banking accommodations.

C. Japan Aids and Autonomy of Economic Policy.

(a) The Gray Report and Japan Aids.

On November 12 last year "Report on Foreign Aids Program of the United States" by Gray Commission was published.

The report recommended with regard to Western Europe, to the effect that aids should be continued for 3 or 4 years apart from aids for military equipment, and with reference to Japan it stated that the payment of Japan aids should be decided taking into full consideration the development of her present condition and the report is concluded with the statements which run somewhat in this wise; "At present, industrial production index in Japan is only a little less than that of the prewar times. The red in international balance accounts is steadily decreasing. The indispensable factor for this recovery is the American aid which runs up to about $1,800,000,000 from September 1945 to June, 1950."

"Should this favorable tendency be continued, Japan would be able to attain complete economic autonomy, and be able to have a considerable amount of dollars in hand and have accumulation of reserve goods to a certain extent, although at the early part of 1952 fiscal year, the income per head would be somewhat below the prewar level." If Japan could secure markets for her products, Japanese economy would not only be able to maintain by far greater export trade, but to keep up considerably higher level for domestic consumption and investment."

Director General of the Economic Stabilization Board, Sudo clarified before the Budget Committee and the Economic Stabilization Committee in the House of Representatives the opinion of the Government on November 28 with the following words:

"It is difficult to attain economic autonomy in July, the coming year and unless the measure of securing the sufficient amount of equipment funds, it would be very difficult to become economically self-supporting by 1953."

Economic autonomy spells the firm establishment of international balance in receipts and expenditures, and this balance must possess the nature of permanency, expansion, and it also must have stability enough to check the influences arising from changes in international conditions. Therefore, real substantial economic autonomy is directly connected with the way to economic rehabilitation. The question is how real economic autonomy could be attained in such a miserable condition as with the living level reaching only 70%, of the prewar times and with Engel coefficient 60.

The development of the new situation caused by the inroad of Chinese Communists in the Korean hostilities, President Truman's declaration of the emergency state of affairs and the utter suspension of trade with Chinese Communists appear to have pushed backward the question of our economic autonomy. If one reads carefully the contents of the Gray Report, he will notice that the new development of the situation itself compells the continuance of Japan aids just as Marshal Aids to England were converted into military aids.

The last paragraph of the Gray Report contains a statement to the following effects:

"However, Japan is perhaps placed in a position for putting greater reliance upon imports than any other country of the world. Whatever the reason may be, if Japan is placed in a situation where she could not increase her export products, necessity for aids from foreign countries would naturally arise." In these very days when movements toward wartime economy are already started, the importation of required raw materials presents the actual difficult problem. The assumption in the Gray Report "if Japan could secure sufficient markets for disposal of her products" would become extremely precarious to hold when we take into consideration such facts as the loss of extensive Chinese market, unstability of political conditions in South-Eastern Asia and maritime insecurity accompanying the development of warlike

situation.

Furthermore as rightly pointed out in the Gray Report, Japan is faced with these serious obstacles:

1. Enfeeblement of competitive ability in a certain section of Japanese export industry. This condition has been brought about the superannuation of factory facilities, inefficient use of labor and un-necessary reduction of Japan's merchant marines on a large scale.

2. Various international political objections relative to the re-admission of Japanese vessels visiting foreign ports and participation in foreign trade.

3. The rapid increase of Japanese population extending over a long period.

These obstacles still continue in Japan forming a bottle-neck for her economic rehabilitation.

The Gray Report says that the question of Japan aids must be carefully taken into consideration, and recommends the increase of aids to South Eastern Asia. However, the new development of international situation has made it difficult to actively carry out the Point 4 Program etc. Therefore we must ask for the continuance of Japan aids.

(b) Japan Aids and the "War-Termination-Disposition" Expenses.

Supposing the case of American Aid to Japan is cut off, there remains a question of its relation to war-termination-disposition expenses running up to about ¥100,000,000,000 which takes up around 15% of the Budget.

The following table shows a trial comparison between the "war termination-disposition" expenses and Japan aid. Speaking in mathematical figures, the former seems to be somewhat larger than the latter.

Temporary Comparison between Japan Aid and the "War-Termination-Disposition" Expenses.

	American Aid to Japan in Million $	War-Termination-Disposition Expenses in Million $
1945, 1946 (9–12)	193	1,283
1947	407	842
1948	464	502
1949	537	355
Total	1,601	2,982

Note: In comparing the two the following exchange rate has been used.

1946, 1$....¥30
1947, 1$....¥80
1948, 1$....¥220
1949, 1$....¥360

Some argue to the effect that the giving up of Japan Aid should rather be welcomed if it means the release from the burden of the "war-termination-disposition" expenses. However, the question can not be handled simply be appealing to mathematical figures. For our country suffering from the poverty of industrial materials especially at the time when difficulty is felt to obtain the goods in the world, aids by goods are most necessary. Whether the aids are endorsed by goods or not has important bearings on the future stability of Japanese economy.

(c) Economic Rehabilitation and Adaptability of Policy.

Japanese economy at present is compared to a cart drawn by two horses. One of the horses is controlled by the tight reins of the Dodge line and the other is dancing to the changes of international conditions. The horses can not briskly run as they often fail to keep their steps in harmony.

Our economy to be rehabilitated hereafter is that of dual nature drawn by two horses as it were. One is to keep the positive stimulus and utilize it toward free capitalistic economy, and the other is to operate strong economic policy positively to smooth the disturbance of equity in capitalistic economy by systematically distributing savings and investments. Therefore in order to harmonize the operation of the dual economy, there is a necessity of carrying out into effect the comprehensive economic policy that is responsive to the actual condition of economy or that is able to give proper guidance to it. In other words the proper economic policy adaptable to the real economic conditions should be adopted.

2. Future of Japanese Economy.

It is desired both at home and abroad that Japanese economy of 1951 should move from the stabilization policy in respect of currency to the comprehensive economic policy that attaches importance to the rehabilitation of economy from its substantial aspect. However, in such a case the rehabilitation of Japanese economy should be considered from the concept of new economic cycle which is at once responsive to the conditions of the world.

The following table gives the percentage of our trade with China (including Manchuria) before War in respect of our export and import, and also for the following chief articles we were dependent upon China in 1936.

Export	1930	1936	1937
	23.6%	24.4%	24.9%
Import	18.3%	14.2%	11.5%
Export	Fishery products		53.8%
	Woolen textiles		35.9%
	Steel		46.5%
	Paper		73.3%
	Steel products		35.7%
	Rubber-tyers		41.1%
	Machinery		66.4%
	Lumber		30.5%
Import	Soy-beans		94.4%
	Coal		76.9%
	Pig iron		40.0%
	Bean oil		94.3%
	Peanuts		84.4%

Thus it will be seen that China including Manchuria occupied about 25% of Japan's total export and we depended upon China for importing major parts of beans, coal, iron and steel. From such standpoint our economic reliance upon the eastern continent is still strongly advocated. At this juncture, we must calmly study the question as to which one of the split-up world economy should be sided by Japanese economy to enhance the public welfare of the people. It would not be simply desired to return to our economic flow or cycle of the past. After the war, in actuality our trade with China in 1947 totaled to 58% of our export and 0.9% of our import, in 1948 1.5% of export and 3.9% of import, and in 1949 it was estimated as 1.20% of export and 4% of import.

We Japanese should now make up our minds to sever political and economic connections with China, and should recognize the importance of finding contact with America, Australia and the South Seas to fill the economic gap. For the picturing of this new idea it is specially important to secure oil and cotton from America, wool from Australia as well as rubber and ores from the South Seas. We are anxious to have positive aids from America and other free countries. At the same time, with a view to protecting Japan from the threats of Communism and to safeguard our political independence and economic welfare, there is every necessity for having strong political power, and determination and economic ability, and possibly even the sacrifice of our ownselves.

REGARDING BANK LOANS IN JAPAN

As regards the particularity in the make-up of accounts for commercial banks in Japan and its changing aspects from time to time, a comprehensive expalanation was already set forth in an article appearing in Volume 1, No. 2, of this Bulletin, in which was also made clear from various ratios of comparison the fact that the accounts of various Japanese banks comprise such factors, when compared with banks in America and England, as look extremely unhealthy due to the special circumstances of Japan's economy. To explain the reasons for appearance of such abnormal situation, it becomes necessary to analyze minutely not only the special circumstances existent at the time of emergence of Japanese capitalistic economy, but the role banks have had to play in the course of economic growth. However, we shall not touch here upon all this, for an explanation thereon was already made in the article, "Analysis of Over-loans", appearing in No. 3 of this Bulletin.

It is true that some of such abnormal characteristics as referred to above in the make-up of capital for various banks in Japan that have so markedly developed during the period of vicious inflation after the end of World War II are steadily being pushed back into their pre-war shape after partial modifications, following the restoration and normalization of general economy along the so-called Dodge plan ever since 1949. To show an example, the proportion occupied by what may be called deposits of a saving character in all the bank deposits is steadily, though very slightly, going up; another instance is the fact that seasonal changes in the aspects of banking are resembling the pre-war shape. On the other hand, it must also be admitted that such abnormal character has been rather intensified in no small measure by vigorous artificial measures adopted to check the inflation. This, it may be said, made its appearance most distinctly in the shape of bank loans following the aggravation of the so-called tight-money in enterprises—namely, in the course of a rapid change from inflation to deflation. It appears many are inclined to place much emphasis, in order to get familiar with the banking situation of Japan, on various ratios of composite elements appearing in the final accounts of banks or other companies, though such is quite a usual method of analysis, but this alone is hardly sufficient, it must be said, to fully comprehend concrete facts existent behind.

Such being the case, the writer intends to introduce through this little article certain concrete aspects of the banking situation in Japan, focussing his main weight on various loan accounts of banks. For this purpose, the writer will hereunder give an explanation on such matters as the weight occupied by the bank advance (in-

cluding discounts) in the operation of fund, the substance of the object of advances and their amount, etc., by borrowing some of the latest bank statistics available in Japan. The writer regrets to say, however, that although Japan's pre-war banking statistics are available in comparatively well-arranged book-form, they are of little value to the purpose to be tackled here, and that the concrete classified statistics about the balance of loans exist only during the war-time when an overall banking control was being enforced and for the period from March 1949 when the compilation of full data began under G. H. Q. memorandum, up to the present.

Needless to say, it is, and must always be, the deposits which become the source of fund that determines for what concrete purpose the bank loans should finally be given; therefore, analysis of loans alone may, it is much feared, become an extremely superficial explanation. Yet, if it be of service in whatever way for making clear the current state of loan business handled by various Japanese banks, the purpose of this small article is, the writer believes, amply met.

(1) Proportion of Supply of Loans in the Operation of Fund.

While the make-up of accounts itself was already dealt with, as mentioned above, in No. 2 of this Bulletin, the following shows, though it is somewhat of the same nature, how much proportion the loan occupies in the operation of funds of banks. In the period immediately preceding the outbreak of World War II, some 60–70 per cent of the deposits of the banks were loaned out, the remainder being invested for securities. But, this proportion markedly went up after the end of the war, the year 1949 showing a 86 per cent high in the ratio of loan supply. This change alone may well be regarded as significant; but, when compared with the manner of operation of funds of bank in America and England, this adds a further appearance that the funds of Japanese banks are decidedly a "risky-asset". However, such ratio in the operation of funds is of course to be largely affected, as it is so with the ratio of deposits against loans, by various conditions of the national economy as well as by the charactristics of bank deposits which serve as the source of much funds.

I. Composition of Earning Assets (Japan)

At the end of Year	Loans & Discounts	Securities
1916	85%	15%
17	84	16
18	83	17
19	85	15
20	85	15
21	81	19
22	82	18
23	82	18
24	83	17
25	81	13
⋮	⋮	⋮
1930	68	32
31	69	31
32	68	32
33	64	36
34	60	40
⋮	⋮	⋮
44	53	47
45	62	38
46	69	31
47	65	35
48	75	25
49	86	14

Despite the fact that accumulation of capital has been meager in Japan, more loans were supplied than deposits, as stated in the article "Basic Analysis of the 'Over-loan' Problem" appearing in No. 3 of this book, from the years of 1900 through to the thirtieths; at the same time, the ratio of loans against the holding of securities during the period of 1916–25 is the same as at present, as shown in Table I. This apparent similarity does not of course show the sameness of basic circumstances, yet the relations between the loans and valuable papers in the operation of bank funds have, at any rate, gone through considerable changes.

The fact that securities hold such a small ratio as at present should be looked upon with great concern from the standpoint of stability and fluidity of assets. This state of affairs is to be attributable to the scantiness of reliable debentures, as well as of government bonds, and also to the reality of the situation in which various enterprise companies find themselves compelled, because of extreme narrowness and unstability of stock-markets, to rely upon borrowings from banks, being unable to issue company stocks. But we shall leave this point for explanation on a later occasion.

(2) Proportion of Uses of Loans.

The primary principle of loaning by commercial banks seems to be that loans should be diverted, like discounts of commercial bills, toward the so-called operational funds which are easy to withdraw within a short period. This is especially true in view of the fact that the source of such funds is the deposits which differ from long-term funds through issuance of debentures and that even those deposits are, unlike those of savings banks, made up of primarily "demand deposits" which are always subject to withdrawal. But this form of commercial short-term financing does not always have the same quality because of changes in the aspects of national economy and of management of various enterprises, in particular. For example, those countries where capitalism has made a marked growth like the United States, the financial power of an enterprise (capital accummulation) is such that it can by itself cover needed operational funds of this sort (at least as in the case of many large and concentrated enterprises). Another factor to be noticed is that a high degree of development of transport facilities and a change in the practice of holding inventories have reduced the necessity of short-term commercial financing to such an extent that the banks are compelled to divert their funds to other uses. This is shown very clearly in attached Table II, which shows a drop in the amount of the so-called commercial loans as against the total loans supplied, from 32% as of the end of 1938 to 25% as of the end of 1949 in American banking.

II. Loans & Investment of All Insured Commercial Banks in America

(in Billion Doller)

End of Year	Total Loans & Investment	Total Loans	Commercial, including open market paper	Agricultural Loan	Loans for purchasing, carrying securities	Real estate Loan	Consumer Loan	Other Loan	Total Investment
1938	37.4	16.0	5.6	1.0	1.8	3.8	3.4		21.4
39	39.2	16.8	6.3	1.0	1.6	4.1	3.6		22.4
40	42.5	18.3	7.1	1.2	1.3	4.4	4.0		24.1
41	39.2	21.2	9.2	1.4	1.2	4.7	4.5		28.0
⋮									
46	112.1	30.7	14.0	1.3	3.1	7.1	4.0	1.0	81.4
47	114.2	37.5	18.0	1.6	2.0	9.2	5.6	1.0	76.6
48	112.2	41.9	18.7	2.7	2.2	10.6	6.8	1.0	70.3
49	118.2	42.4	16.9	2.9	2.6	11.4	8.0	1.1	75.7

from "Banking & Monetary Statistics <F.R.S.>
〃 Federal Reserve Bulletin < 〃 >

Likewise, in England, in such leading banks as the Lloyds, the Midland, the Westminster, etc. the ratio of advances against assetts dropped from somewhere about 40% as of the end of 1939 to 20% or so as of the end of 1948. It needs little explanation that such drop in the amount of short-time commercial loans is well set off by an increase in investments in the form of securities to say nothing of national bonds. A striking fact relative to this in the United States is a phenemonal rise of real estate loans and consumer loans.

In Japan, however, although it is somewhat difficult to distinguish commercial loan from other loans due mainly to differences in the compilation of over-all data, we find from the following table a peculiar tendency of our banking loans in distinction between short-time loans (operational funds) and long-term loans (equipment funds).

To comprehend Table III, the reader should note that the figures covering the the years upto 1945 stand for the war-time period when financial control was being enforced and also that the banking organs listed there include special banks (the Industrial Bank, the Hypothec Bank, the Colonial Bank of Hokkaido), whose primary task is to advance long-term loans. (Also note that these are the only available figures.) In other words, it will be seen first of all that because of an expansion of equipments carried out before the necessity of rapid expansion in the output of munitions, equipment funds occupy a comparatively large share. Secondly, care must be taken not to judge the character of advances from ordinary banks directly from Table III, because the advances from those special banks then occupied 40–30% of the total advances from the nation's entire advances combined. But the post-war figures show a marked drop in the proportion of equipment funds. This is due to a con-

tinual increase of demand for operational funds from enterprise, following a spiral aggravation of inflation. These post-war figures do not include the advances made by the Reconversion Finance Bank (a national banking organ which was in charge of advancing a greater portion of equipment funds that were made outside the object of loaning from ordinary private banks, for the purpose of war-damage restoration; in March 1949, which was the peak period in loaning, it advanced ¥140 billion or one-third of the total advances from all banks combined, of which 70% was diverted toward equipment funds). Accordingly, if the share done by the Reconversion Finance Bank is computed, the post-war proportion would come up to almost the pre-war level.

III. Loans of All Financial Intitutions (all Banks) of Japan as Divided by Use

(in billion yen)

	Fund for Operation		Fund for equipment	
		%		%
1940 Dec.	8.1	(66.5)	3.4	(33.5)
1941	9.1	(66.0)	3.8	(34.0)
42	10.7	(65.5)	4.4	(34.5)
43	14.4	(70.0)	6.3	(30.0)
44	27.9	(74.0)	10.1	(26.0)
45	32.5	(75.0)	11.2	(25.0)
⋮	⋮		⋮	
49 March	381.192	(92.9)	28.9	(7.1)
〃 Dec.	631.762	(92.8)	48.8	(7.2)
50 Sept.	787.696	(90.7)	80.6	(9.3)

Because such division between operational funds and equipment funds is only a documentary division through papers filed before loaning, it is doubtful, of course, whether those loans, thus advanced, are being actually used as originally intended. Be that as it may, if the conclusion were to be drawn from these statistical facts as visible in the above-mentioned Tables, we might say like this: In Japan where accummulation of own capital of an enterprise is inadequate, especially since the adoption of a vigorous deflationary policy designed for suppression of inflation, the relationship between the entire banking organs and the industrial circles is so very direct and close that the banks are advancing funds to enterprises, not in the indirect form of company debenture or stock, but in the form of direct advance. What is more, almost all such advances are diverted toward industry, and consumer loans or real estate loans which have come to draw so much attention in the United States don't have any significant position statistically. In fact, individual credits merely occupy a little over 1% of the total advances of the nation's all banks combined.

(3) Division of Loans according to Trade.

Table IV also indicates the results obtained by adding the post-war figures to the substantial data based on the minute investigations of advances made from the nation's entire banking organs, which were a product of the financial control during World War II. However, because the post-war classification according to trade does not always comprise the same elements as the pre-war one, and also because the pre-war data cover the entire banking organs (including the special banks), while the post-war data cover ordinary banks only (excluding the above-mentioned Reconversion Finance Bank), there lacks con-

sistency, in the true sense of the word.

Moreover, with no data available about loans supplied by all banks according to trade for the period preceding the time covered by this Table, it is impossible to make a comparison with the pre-war period. Besides, taking into consideration the fact that bank advances in post-war Japan have been regulated, as in the war-time, by the financial control policy of the Government under the inflationary circumstances, whereby advances were made with priority given to the so-called "designated key industries and trades", thereby rendering unimportant and non-urgent enterprises totally inaccessable to loans (such control is no long existent), this Table does not reflect, by any means, the natural result of own selection on the part of the banks for free fund demand in industry or enterprise. As explained already, the figures in this Table do not cover the Reconversion Finance Bank which since 1947 was solely in charge of furnishing funds toward such basic industrial fields as coal, steel, chemical industry, which have been put on a different track from the general commercial base. Also, funds were advanced by the said Bank toward various public corporations (control organs of the State), which were established following the enforcement of the price and rationing controls, in the course of their respective activities, and when occasion necessitated; consequently, commercial funds which would otherwise of course be required under laissez-faire economy had been made outside the financing route of the banks until the abolition of the corporation.

Because such scores of factors as stated above must be taken into consideration, it is only natural that we can not vividly imagine, from Table IV alone, the real picture whereby Japan's various industrial branches are tied up with the banks. Nevertheless, we may safely and explicitly point, amidst such restrictions, to the following facts.

IV. Division of Loans According to Trade (%)

	1940	1941	1942	1943	1944	1945	1948	1949	1950
Mining	5.9	6.9	6.6	5.5	4.3	4.4	6.1	5.7	4.8
Manufacturing	42.8	43.8	45.7	46.9	47.9	51.4	58.7	56.0	55.5
textile	8.1	6.4	5.9	6.2	5.3	3.9	15.4	17.0	17.2
metalic	6.8	7.5	6.6	6.6	7.2	7.1	5.8	6.1	5.6
machine, tool	12.6	15.3	8.6	8.9	11.4	12.6	13.9	13.9	2.6
amunition			8.9	11.3	13.7	17.2			
ceramics	1.0	1.0	1.1	0.6		0.6	1.8	1.9	1.7
chemical	6.6	7.0	7.8	8.3	7.1	6.6	11.4	11.4	6.7
food	1.8	1.6	1.8	1.5	0.9	0.9	5.5	5.3	5.0
elect. gas	4.8	4.1	4.1	2.7	1.4	1.3	1.1	1.4	1.4
others	1.2	1.0	1.1	1.1	0.9	1.2	3.8	1.5	15.3
Agriculture, Forestry	0.7	0.7	0.5	0.5	1.2	0.5	1.7	1.3	0.8
Fishery	1.0	0.8	1.0	0.9		0.6	2.7	2.4	1.6
Transportation	6.7	6.1	6.0	5.5	4.2	4.2	3.5	3.9	4.3
Commerce	19.6	21.1	21.4	17.4	21.6	20.2	16.0	21.7	24.5
Others	23.2	20.5	18.7	23.0	20.5	18.5	11.3	9.0	8.5
Total	100	100	100	100	100	100	100	100	

The first fact is that almost all bank loans are absorbed into some sorts of industrial branches, and that, with the exception of a very few special banking institutes with a very limited sphere of activity, the entire banks of Japan are putting, or rather are compelled to put, entirely outside their consideration real estate loans for building houses or individual conscumer loans. The second is that so little portion, almost surprisingly small at that, is occupied by agriculture, forestry or marine industry, of all the industrial branches as the objects of loaning. By the way, it is also characteristically true that these three industrial fields can't keep up pace with growth of modern capitalism from the standpoint of management even in advanced foreign countries. And such tendency is particularly eminent in Japan. Consequently, what could be the object of loaning from the banks which are modern banking organs insofar as aggricultural management is concerned cover lumber sawing, tea manufacture, sericulture, and a portion of stock-raising, besides the farmer cooperatives. The actual state of loaning towards them is, as seen from the above, very small in amount.

When this situation is compared with that in the United States, it becomes clear that loans supplied by the Japanese banking organs are overwhelmingly inclined, so to say, to industry and commerce. This also shows that it is difficult to comprehend the actual banking and financial conditions of this country merely from the weight between the items of deposits and advances appearing in the balance-sheet or from the ratio of composition of various items of accounts.

In addition to what has been stated above, a further explanation on the bank loan itself is desirable from many other angles such as actual ratio of withdrawal, state of spread of loans in scale per case, analysis of interest, the problem of mortgage to be put up, etc. But all this has to be left untouched here because of lack of data. Table V which shows a tendency of mortgage against loans in five clearing houses may serve as a reference.

V. Composition of Mortgage Against Loans for Member Banks in Big 5 Cities' Clearing Houses

Year / mortgage	1940	1941	1942	1943
Not-Secured	53%	55%	59%	66%
Securities	21.7	18.1	16	13.1
Commodities	2.5	2.8	2.2	0.3
Real Estates	4.4	3.8	3.2	2.6
Syndicate	4.2	4.6	5	4
Bonds & Deeds	12.8	14.0	12.7	12
Others	1.4	1.6	1.9	2
Total	100	100	100	100

At any rate, an explanation has been given above, though inadequately, on the loan accounts of the bank itself. Finally, we shall touch, before concluding this little article, briefly upon, apart from the bank, what position the bank loan occupies today, viewed from an over-all angle of procurement of industrial fund.

Ordinary banks in Japan have ceased any longer to be such type of banks as related to issuance of debentures and stocks

with a German nature as in the past, in line with economic democratization following her defeat in the war, but have come to devote themselves solely to banking business only, separated from floation business. That is exactly the course anticipated to be followed by commercial banks serving as the supplier of short term industrial funds,—which reflects an ideal of democratization of banking system in Japan. On the other hand, however, on the part of industrial enterprise, a greater part of their accumulated capitals have been lost due to war damage and other factors, and yet, they desperately needed a huge amount of long-term funds for restoration of their productive capacity,—the fact that has brought, as stated above, the Reconversion Finance Bank into a most brilliant activity. Because the supply of those funds from the said Bank, made available in the form of the Bank's debenture to be accepted by the Bank of Japan, brought about an increased issuance of bank notes, and thus was considered to become a major cause of inflation, they were finally banned under the plan laid down by Mr. Dodge. Consequently, the alternative, and at the same time the desirable picture, would be for each enterprise to seek its requisite long-term industrial fund in the form of internal reserves, increased capital, and company debenture, etc., namely, as the capital of its own. But, at the present stage, there is no prospect that the internal reserves in enterprise could be rapidly expanded a great deal, while either an increase of capital or issuance of company debentures would be virtually impracticable under the current dull circumstances of security market, except a few exceptionally superior companies. Such being the case, the position of an ordinary bank in the field of supply of industrial fund, could not remain merely as the supplier of short-term commercial loans, much against the original task imposed upon it. This is clearly seen from Table VI, shown hereunder, which was compiled on the basic of material supplied from ESB.

VI Results in Supply of Industrial Fund (Showing net increase)

(100 million yen)

Year / details / Sources	1949				1950, 1st Half			
	Equipment	Operation	total	%	Equipment	Operation	total	%
Loans of Banks	313	3,817	4,130	71.7	226	1,346	1,572	71.6
C.P. Fund	246	0	246	4.3	39	0	39	1.8
Debenture	189	77	266	4.6	129	71	200	9.1
Stock	364	371	735	12.8	68	78	146	6.6
Internal Reserve	190	190	380	6.6	120	120	240	10.9
Total	1,302	4,455	5,757	100	582	1,615	2,197	100

The activity of this 'monster-like' Reconversion Finance Bank reduced gradually, if not altogether, in 1949–50. Therefore, the banking organs, so called here, can be regarded primarily as ordinary banks, whose supply of fund reaches, no doubt, more than 70 per cent of the total loans supplied. Besides, procurement of debentures means after all absorption by banks owing to dullness in security market, so that as much as 80–90 per cent of the total industrial fund had to be relied upon banks. Also viewed from the angle of uses, equipment funds which could not be the object of commercial bank loans, were actually supplied by banks in a larger amount than through any other sources, namely, 24% through direct loans alone, which, plus indirect investment through absorption of debentures, comes up to 40% in total. (It must be noted that of all those banks, such old special banks as the Industrial Bank, the Hypothec Bank, the Colonial Bank of Hokkaido, the Central Bank for Agriculture and Forestry, etc. are issuing bills anew, by which a greater part of equipment fund has been covered.)

All this explains, after all, the circumstances under which a state of "over-loans" from banks, as it now appears, is really unavoidable. It also makes it clear that banks have had to procure a considerably large portion of such huge fund by means of borrowings from the Bank of Japan. Thus, it will be seen the very difficulty of accumulating and procuring capital for enterprise is affecting directly and seriously the form and character of bank loans, as stated above.

COPPER, LEAD AND ZINC IN JAPAN

1. Introductory remark.
2. Actual results of production.
3. Latest condition of demand and supply.
4. Change in prices.
5. Conclusion.

1. Introductory remark

The non-ferrous metal industry has only a short history. It appeared late on the stage of modern capitalism built up on iron, steel and coal, yet it is playing an indispensable support's role. Our country is known for copper mining from ancient times but the production of the other minerals under review began later than Mid-Meiji Era. As the Japanese economic reestablishment after the war was started under a snow-man system (priority production system) of iron, steel and coal, the production of non-ferrous metals has been put in a very disadvantageous condition. Following the adjustment of gold, tin and sulpher mines during the war, middle and small-sized mines, which had escaped downfall due to the profuse protection of the State lost support and their number steadily decreased. As to the remaining mines, there were deterioration of working condition resulting from irrational extraction during the war, extreme lowering of operational efficiency and spiral inflation, and serious restriction in capital, material, transportation, electric power, etc. In spite of these causes for high production cost, controlled economy held down their prices, and as a result figures in red had been ever increasing in mining enterprises' books.

Since 1949, however, non-ferrous metals except gold and silver have met a boom due to sudden rise in price. Now the Government began to show good-will and concern to the metal industry which on its part made good its rationalization of operation. Especially the critical change in international relations has brought about increased prices of non-ferrous metals and attention is being attracted to a metal boom development.

But when compared with the peak during the war, there is a remarkable snag of production.

	1949 (in one thousand tons)	peak period in 1943 (in one thousand tons)
Electrolytic copper	74,037	123,499
Electrolytic and distilled zinc	32,318	93,385
Electrolytic lead	12,599	30,040

The latest monthly production (Aug. 1950) is: Electrolytic copper 7,196 tons, Electrolytic lead 1,298 tons, Electrolytic zinc 2,858 tons and Distilled zinc 1,436 tons.

There are some fundamental features in the Japanese non-ferrous metals mining which include:

In the first place, it is remarkable that in Japan big capitals co-exist with small ones. Small as Japan is in its extent, there is such a great variety of mines as is rarely seen in other countries. A large part of mining enterprises consists of small capitals operating limited mining claims. As they have no smeltery, they have to sell ores at low prices to a few big enterprises which have smelteries.

There are about thirty major mining companies while others are mostly individual mine-owners. Big enterprises with smelteries (the Nihon Kogyo, the Taihei Kogyo, the Kamioka Kogyo, the Furukawa Kogyo, the Besshi Kogyo, the Dowa Kogyo) monopolize a greater part of the metal industry in Japan.

Table 1. Comparative Mining Products of Principal Companies.

	Amount of deposit	Copper	Gold	Silver	Sulphide	Zinc	Lead
	A thousand ton	A thousand ton	tons	A thousand ton	A thousand ton	A thousand ton	A thousand ton
Taihei Kogyo	21,348	20.6	13.4	0.4	—	308	125
Kamioka Kogyo	38,867	—	15.5	1.2	—	1,653	150
Besshi Kogyo	22,500	184.1	32.9	0.5	—	20	7.5
Nihon Kogyo	21,657	147.4	12.0	0.1	2,986	—	—
Furukawa Kogyo	9,131	218.8	2.7	7.7	—	18.3	6.7
Dowa Kogyo	41,243	23.4	—	—	11,241	—	—
Matsuo Kogyo	141,679	—	—	—	141,679	—	—
Chugai Kogyo	3,200	—	7.5	0.25	—	32	17
Toho Aen	3,400	—	2.8	0.18	—	210	90

In 1948, the products of the six companies mentioned are copper 80%, lead 74%, zinc 77% and sulphide 63%. On the other hand, there are thousands of small enterprisers who continue to sell ores and are playing an important part in supply of materials to smelteries. But in order to enable them to get ores at low prices from small mines, prices of ores are set at very low rates, and in cost accounting, it is so arranged as to set a margin for the smelters. Thus poor mines are operated only in a boom season and closed in depression, playing the part of a "cushion reserve". Anyway this large number of small enterprises forms a special feature of the Japanese metal mining as in the coal industry, and affords a lot of difficult questions from the administrative standpoint.

Secondly, our metal mining is favored with cheap labor and on that account mechanization is being delayed. In other words, the goal has been set in increasing absolute surplus value through constrained labor and low wages rather than realizing relative surplus value by improvement of production of labor, and little effort has been made for improvement of technique

and efficiency.

Thirdly, the greatest problem is that, different from other kinds of industry, the metal industry needs an exceedingly long years and a large amount of capital for exploitation, with a long time required for a turnover of capital. Once closed, a mine requires more sacrifice in reopening it than developing a new mine as our gold mine adjustment in the war-time well testifies.

On account of these special features of metal mining, big mining companies had been either affiliated with Zaibatsu or stood under their protection. (Of the foregoing six companies, the Kamioka Kogyo, the Taihei Kogyo, the Besshi Kogyo were under the direct control of the Mitsui, Mitsubishi and Sumitomo respectively. The Nihon Kogyo had belonged to the Nissan Concern and the Furukawa Kogyo had formed the nucleus of the Furukawa Concern as is well known.) Enterprises connected with the Zaibatsu had been in league with the Zaibatsu banks while others had had the Industrial Banks of Japan, the Teikoku Kohatsu and other special banks to depend upon. Especially, during the war the Controlled Distribution Company established to meet an enormous metal demand during the war monopolized all purchases, and there existed no financial difficulties. As to equipment capital, there was no difficulty of obtaining it as the Government gave mandatory accommodation. After the war, the Zaibatsu and other privileged institutions were dissolved and disappeared. Production consequently decreased in metal mines. Japanese mining companies with small capital and assets met with a crisis through unbalance of incomes and outlays on account of inflational spiral, and through financial difficulty due to depression of metal secondary and subsequent processing businesses. Lately the market is turning for the better and enterprises are showing an upward trend. But it is a pity that banks are still unable to meet demand for big long-term loans sufficiently.

Since the war's end our metal mining industry which had been under special condition mentioned, had passed through a vacuum period (Aug. 1945—Mar. 1946), a fuel shortage period (April 1946—Dec. 1946), a red account period (since Jan. 1947), until it entered a self-supporting period in April 1949, followed by an international boom since April 1950.

2. The results of production

A) Mining production.

Non-ferrous mining industry in Japan made a remarkable development in the decade beginning 1935 through the China Affair and the Pacific War, and reached its peak around 1943, its scale being expanded from twice to five times as much as that of the basic period (1930–1934). Its production, however, declined gradually thereafter, the war rather proving a stumbling-block to it. It rapidly sank low since the end of the war, which precipitated the downward movement of industrial production in general due to the war damage and disappearance of war-time demand.

Recovery of production became gradually conspicuous in 1948, in spite of accelerated

adjustment of enterprises, and the production especially of lead, zinc and pyrites rose higher than the average level of the 1930–34 period.

On the other side, the production of gold, silver, copper or tin was much lower than the average output of the 1930–34 period. It was, however, increasing steadily, as compared with that at the end of the war.

Table 2. The Amount of production of principal non-ferrous metal ores.

(In calender years)

	Gold	Silver	Copper	Lead	Zinc	Tin	Pyrites
	kg	t	t	t	t	t	Thousand Tons
1930~34	13,143 (100)	181 (100)	72,559 (100)	5,586 (100)	27,985 (100)	1,264 (100)	768 (100)
37	23,010 (175.0)	314 (173.5)	86,728 (118.2)	10,392 (185.9)	49,233 (175.9)	1,702 (134.7)	1,928 (264.3)
40	26,957 (505.1)	356 (196.7)	99,841 (137.6)	16,808 (300.9)	61,078 (218.3)	1,781 (140.9)	1,859 (242.8)
43	11,465 (87.2)	234 (129.3)	112,776 (155.4)	29,828 (533.9)	61,883 (221.1)	1,815 (143.6)	1,168 (152.1)
45	2,486 (18.9)	63 (34.8)	23,300 (31.1)	9,480 (169.7)	16,606 (59.3)	62 (4.9)	435 (56.6)
46	866 (6.6)	48 (26.2)	23,271 (32.1)	4,965 (88.9)	11,253 (40.2)	162 (12.8)	493 (64.2)
47	1,783 (13.5)	59 (32.6)	21,883 (30.2)	5,929 (106.1)	29,674 (106.0)	111 (8.1)	832 (105.7)
48	2,170 (16.5)	69 (38.1)	25,711 (35.5)	6,676 (119.5)	33,217 (118.7)	120 (9.5)	1,139 (148.4)
49	2,629 (20.0)	85 (47.0)	32,741 (45.1)	9,106 (163.0)	44,314 (158.4)	192 (1.5)	1,535 (199.9)

Table 3. The results of production in crude copper.

(Unit: ton)

Crude copper	1948	1949	Percentage (%)
Kunitomi, Hokkaido	738	1,381	1.8
Ozarusawa, Akita	5,624	7,005	9.1
Kozaka, Akita	3,742	5,811	7.6
Hatsumori, Akita	1,536	1,869	2.4
Nagamatsu, Yamagata	178	117	0.2
Hitachi, Ibaraki	14,621	13,785	18.0
Ashio, Tochigi	4,792	6,103	8.0
Ogoya, Ishikawa	1,854	1,889	2.5
Hibi, Okayama		3,927	
Naozima, Kagawa	3,437	10,805	14.1
Shinsakajima, Ehime	9,573	11,353	14.8
Saganoseki, Oita	11,051	10,688	13.9
Others	10,523	1,889	2.5
Total	65,791	76,622	100

Table 4. The results of Production on Crude Lead.

	1948	1949	Percentage (%)
Hosokura, Miyagi	3,770	5,160	42.1
Aizu, Fukushima	736	487	4.0
Hitachi, Ibaraki	161	444	3.6
Murakami, Niigata	417	417	3.4
Kamioka, Gifu	4,087	4,801	39.1
Saganoseki, Oita	236	954	7.8
Konomai, Hokkaido		10	
Total	9,407	12,266	100

Table 5. The amount of production of metals.

(Unit: 1,000 m. ton)

	Electrolytic copper	Lead	Zinc
1935-37	78.5	8.9	40.8
1938	95.2	11.1	56.1
1939	93.4	13.7	61.5
1940	94.8	18.0	63.1
1941	81.6	18.1	64.0
1942	91.2	24.8	59.8
1943	112.8	29.8	61.9
1944	90.2	43.1	60.0
1945	25.3	9.3	16.9
1946	23.3	5.0	11.2
1947	36.8	8.4	14.8
1948	54.3	10.3	21.2
1949	74.0	12.7	32.3

d) Metal industry.

Production of metals also declined from its peak in 1943, the bottom having been reached in 1946. It could not expand immediately after the end of the war, and the industry depended mainly on the stockpiles at the restart. It recovered conspicuously in 1948, but had to tread a thorny way in 1949, owing to general depression following the Dodge Line and the abolishment of subsidy.

(The production, however, has been increasing this year under a favorable condition.)

50% to 60% of the world production of non-ferrous metals in recent years is occupied by the United States. Japan, although small in quantity has been included in the best ten of the principal copper and zinc producing countries of the world.

Table 6. The results of production of electrolytic copper.

(Unit: ton)

	1948	1949	(%)
Kosaka, Akita	3,288	5,141	7.0
Nikko Refinery Plant, Tochigi	9,824	14,152	19.1
Hitachi, Ibaraki	13,483	14,608	19.8
Annaka, Gunma	706	1,328	1.8
Mitsubishi Osaka, Osaka	8,867	11,486	15.5
Takehara, Hiroshima	3,075	3 964	5.4
Araihama, Ehime	10,370	12,527	16.9
Saganoseki, Oita	10,456	10,714	14.5
Total	60,073	73,923	100.0

Table 7. The results of production of electrolytic lead.

(Unit: ton)

	1948	1949	(%)
Hosokura, Miyagi	3,131	4,462	34.0
Aizu, Fukushima	618	526	4.0
Murakami, Niigata	443	400	3.1
Fukuoka, Gifu	3,432	4,435	33.2
Sahara, Hiroshima	1,576	2,240	17.1
Saganoseki, Oita	1,993	947	7.2
Annaka, Gunma	3	185	1.4
Total	10,399	13,105	100.0

Table 8. (A) The results of production of distilled Zinc.

(Unit: ton)

	1948	1949	(%)
Hikoshima, Yamaguchi	2,902	4,412	35.7
Miike, Fukuoka	5,887	7,943	64.3
Total	8,789	12,355	100.0

Table 9. (B) The results of production of electrolytic Zinc.

(Unit: ton)

	1948	1949	(%)
Hosokura, Miyagi	3,029	5,406	22.2
Aizu, Fukushima	2,131	3,936	16.2
Annaka, Gunma	681	2,699	11.1
Fukuoka, Gifu	4,883	7,607	31.3
Miike, Fukuoka	2,806	4,681	19.2
Total	13,533	24,329	100.0

Table 10. Demand and Supply of non-ferrous metals in the fiscal year of 1949.

(Compiled by the Mining Division in the Natural Resources Section)

		Classification	Copper (Metric ton)	Old copper (〃)	New lead (〃)	Reproduced lead (〃)	Scrap lead (〃)	Zinc (〃)
Supply	In Stock as of end of March 1949	Refinery Plants	Approximately 6,000	0	1,933	(Reproducers) 862	0	2,696
		Industry Rehabilitation Public Corporation	4,823	18,952	914	8,044	7,323	1,410
		Mineral and Industrial Products Trade Public Corporation	0	0	6,124	0	429	0
		Dealers (Wholesale)	274	3,484	139	322	302	308
		Others	13	796	104	133	212	756
		Consumers (running stock)	Approximately 6,000	34,752	4,136	4,893	8,630	4,976
		Total (Instock)	17,110	57,984	13,105	14,254	16,895	10,146
	The results of production in 1949		73,923	—	(Accumulators) 13,105 1,989	20,037 6,689 (Accumulators)	—	(Electrolytic zinc) 24,330 (distilled) 12,355
	The amount of import in 1949		0	0	9,426	0	257	0
	Total		91,033	57,984	37,870	40,980	17,152	46,831
Demand	The Amount of delivery in 1949	Delivery for home consumption	Electric wires 33,098 Sheet copper 4,599 Cast copper 144 Others 1,651	Electric wires 1,485 Sheet copper 21,176 Cast copper 9,239 for refinery 23,144 Others 2,316	Electric wires 2,640 Accumulators 3,313 Item {1,244 / 1,989} non-organic 281 tube and plate 527 heavy pin 2,579	Electric wires 3,538 Accumulators 9,292 Item {2,603 / 6,689} non-organic 596 tube and plate 8,150 Fusible alloy 1,759 for refinery 5,346 for re-production 14,388		Steel 23,479 Sheet copper 4,427 Zinc plate 3,246 Zinc flower 4,477 Zinc powder 725 Others 2,500
		Total	39,492	57,360	9,340	8,719		38,854
		Delivery for export	Metal 30,032	0	0	0		0
	Grand Total		74,372	95,092	11,806	48,719		38,854
	In stock as of the end of March, 1950		25,896	42,253	27,649	6,614	11,873	{Electrolytic 3,471 / Distilled 2,354}
	Items	In hand of supplyers	21,248	4,521	25,183	2,642	9,404	{Electrolytic 897 / Distilled 274}
		In running stock of consumers	4,648	37,732	2,466	3,972	3,489	{Electrolytic 2,574 / Distilled 2,080}

4. The condition of supply and demand in recent years.

(1) Copper

It is estimated roughly that the amount of average consumption of copper in Japan during the period of 1925–32 was 6,000 to 7,000 tons a year, and that in the period of 1933–44 was, according to incomplete statistics, 135,000 tons, inclusive of the war-time stockpiles.

Although the consumption increased to 72,319 tons in (fiscal) 1948 and 91,033 tons in 1949, it was much lower than the pre-war level. Its supply and demand for 1950 was originally estimated by the Economic Stabilization Board as following table indicates. According to it, production amounts to 80,000 tons which is somewhat higher than about 74,000 tons in 1949 while demand is 43,000 tons, or 4,000 tons more than 39.000 tons of the previous year.

Table 11. The plan for demand and supply of electrolytic copper during fiscal 1950.

(Compiled by the E. S. B.)

Supply (A)		Demand (B)	
Stockpiles as of the end of fiscal 1949	9,600(tons)	Electric wires	38,500
Items:		Sheet copper	3,200
In the Public corporation.	4,000		
On the market	3,000	Castings	1,300
In refinery plants	9,600		
The estimated amount of production in 1950	80,000	Total	43,000
Items:			
Produced from ores.	37,000	Miscellaneous materials for export	40,000
Reproduction of old copper	43,000	A−B= (to be carried over)	6,600
Total	89,000		

Table 12. Demand and Supply of electrolytic copper.

(Investigations by Japan Mining Industry Association)

	April	Mar.	June	July	August	Total from Apr. to Aug.
	(tons)					
Total Production	6,454	6,751	6,912	7,057	7,186	34,360
Total sales	12,199	11,725	7,600	8,091	11,071	51,494
Stock-piles	6,375	1,399	703	7,402	3,524	3,524

Remark: Sales since July indicate the amount of delivery, so the figures showing the amounts of stock-piles from June to July do not tally with them.

The actual condition of supply and demand in 1950 is roughly as follows.

While the amount of production was only a little above the estimated one, the amount

of demand was increasing every month, and all the stock-piles on the market have been exhausted since July, bringing buyers of copper to a state where it is impossible for them even to make a contract for "futures". It is due to the fact that, from the beginning of the year 1950, economic depression in Japan was not so bad as expected and the export trade enjoyed a boost (6,345 tons in April, 5,560 in May 4,500 in June, 3,600 in July and 2,400 in August totaling 22,405 tons, which were chiefly shipped to the United States, and the E. C. A. countries in South America). Generally speaking, it reflects an intense demand on the world markets, owing to deficiency in the absolute amount of copper and an increased demand by war industries.

Although it may be considered that it has been affected both internationally and internally by speculative purchases as a result of rapid rise in prices, (to be dealt with later on) the fact that there is an absolute shortage due to a remarkable decline in post-war world production of copper and that there is an expansion of armament going on in the United States which is consuming a greater part of the supply, will have a dominant influence on the international markets, as well as the copper market of Japan. Both may thus continue, for the time being, to be "sellers" markets.

(2) Lead

The presumed amount of yearly consumption of zinc during the period of 1925–33 is 61,000 tons on an average, while that in the period of 1934–44 is 85,000 tons. The demand increased conspicuously around 1934–5, being directly stimulated by the war.

The results of production of lead in 1949 totaled 85,000 tons, but delivery of new lead amounted only to 11,806 tons. Therefore, the stock-piles at the beginning of 1950 amounted to an enormous figure of 25,825 tons, including 15,550 tons on hand by the Public Corporation, which was brought by the existence of reproduced lead and scrap lead on the market.

However, international demand increased suddenly from the beginning of the year 1950, and the delivery has been made twice of lead on hand by the Public Corporation recently, totaling 4,000 tons (which had been imported up to March, 1949, at the price of about ¥140,000 corresponding to 18 cents, c. i. f. in Japan, and was exported at the price of ¥39,000, last time), reducing the remaining stock to 11,000 tons.

On the other side, domestic demand also increased rapidly, amounting, it is estimated, to about 5,000 tons a month. The amount of monthly production, under the present circumstances of productivity in Japan, is estimated at 1,500 tons in reproduction and 1,300 tons in manufacture from ores, in consequence of which about 2,200 tons stored by the Public Corporation have to be released. Consequently, their stock-piles will be consumed completely by the end of 1950, marking a turning point in the condition of demand and supply. While there has constantly been pressure on the market brought by an enormous quantity of old lead and scrap lead, they

have been exported to the extent of 4,500 in May, 1,890 in June and 50 in July (due to special procurement demand), and 670 in August, totaling 7,110 tons, about ¥80,000 in value at the price of 11 cents, f. o. b. (Their export, however, has been bauned since July)

Accordingly, it is quite gratifying to the business concerned that the demand and supply plan of 1950 (see Table 13) which was so pessimistic has been overstepped.

Table 13. The Plan for Demand and Supply of Lead in 1950.

(Compiled by the E. S. B.)

Supply (A)		Demand (B)	
The amount carries over from the previous year		Electric wires	5,000
in stock at refinery plants	8,300	Accumulators	4,480
"by the Industry Rehabilitation Public Corporation	897	Non-organic Chemicals	200
"by the Mineral and Industrial Products Trade Public Corporation	15,550	Total	9,680
Others	75	Others	1,000
On the market	1,000	Grand Total	10,680
Total	25,825	A—B=	34,642
The amount of production under plan for 1950		(excess in supply)	
in refinery plants	17,500		
Reproduction	2,000		
Total	19,500		
Grand total	45,322		

Table 14. Demand and supply of electrolytic lead in 1950.

(April—August)

	April	May	June	July	Aug.	April-Aug.
Production	1,250	1,269	1,298	1,397	1,298	6,520
Sales	104	5,677	3,277	2,546	1,906	13,510
Stock-piles at end of each month	9,540	5,042	3,063	2,389	3,695	3,695

Remark: Figures in column of sales since July denote the amount of delivery.

(3) Zinc

On zinc the report of the Office of Natural Resources says that the average estimated volume of consumption was figured at 5,400 tons between 1925 and 1933 while it was figured at 82,000 tons between 1934 and 1944.

After the war, the output for 1948 was 45,933 tons which was decreased to 38,854 tons in 1949. However, according to the

program for 1950, it was figured at 57,218 tons, somewhat larger than the actual output for the previous year. These figures prospectively include 300 thousand tons of galvanized sheet of which 200 thousand tons are for export. The output of galvanized sheet covers more than 70% of the total supply and demand; thus the business condition of galvanized sheet finally decides the fate of zinc industry. It will be seen that the output of galvanized sheet for the year 1950 is larger than what was originally planned which had been regarded as vastly over-estimating, the amount being 21,847 tons in April, 21,947 tons in May, 25,361 tons in June, and 29,751 tons in July making a total of 98,907 tons for the 1st quarter of the year of which 45,657 was for export. Accordingly, as shown in the attached table, the shortage of zinc on stock is apprehended. The estimate for the 3rd quarter of the year is 12,900 tons of zinc for refinery and 500 tons for re-production, the supply of which reveals considerable shortage, and it is desired to have 2,000 tons of zinc ores imported. Since the import price of zinc is 33 cents c.i.f. Japan, there prevails strongest market for it at present.

Table 15. Plans for Demand and Supply of Zinc for 1950.

(E. S. B.)

Supply (A)		Demand (B)	
Carried from the previous year		Secondary Iron and Steel products.	31,818
Import	1,080	Electro-plated	1,500
Stocks on hand	500	Copper articles	1,200
Total	1,580	Zinc plates	4,000
Production plan for the present year		Zinc powder	6,000
Refinery (electrolytic zinc)	35,500 (Ton)	Zinc dust	1,200
〃 (Distillation)	14,500	Diecast	200
Re-production Distilled zinc	2,000	Machinery	400
Total	52,000	Shipping	300
Amount supplied	53,500	Communication	100
		Total	57,218
		Others	782
		Volume of demands	53,500

Table 16. Demand and Supply of Electrolytic Zinc for 1950.

(April to August) Demand and Supply of Electrolytic Zinc

	April	May	June	July	August	Total
Production	2,446	2,835	2,737	2,847	2,858	13,724
Sales	2,592	2,859	2,415	3,173	2,787	13,820
Stocks on hand at month end.	245	221	543	784	855	855

Table for Demand and Supply of Distillated Zinc
(April-August)

Kamioka Mine	1,376	1,420	1,429	1,429	1,436	7,090
Sales	1,088	1,115	1,703	1,470	1,544	6,920
Stocks on hand at month end.	139	446	172	131	167	167

Sales after July amount delivered.

5. Shifting of Prices.

Of the prices of various non-ferrous metals, those of electrolytic copper, lead and zinc form the center of movements.

These products being regarded as chief materials for industrial products, the consumption prices up to the year 1949 were officially fixed at low rate while producers were given subsides to cover price differentials. Due to such stilted doublefold economy, the law for price was interrupted by the power of the State.

However, since the last year, the Dodge classic measure for stabilization has been adopted with a view to place economy on free commercial base, which has brought about the abolishment of subsidies for non-ferrous metals as well as their control.

Note: The producers' price of electrolytic copper was ¥181,060 and that of consumers ¥102,014, that of electrolytic lead ¥80,810 and that of consumers ¥59,103, that of electrolytic producers was ¥58,030 and that of consumers ¥42,284 and that of steam zinc producers was ¥55,030 and that of consumers ¥42,284. On April 1, subsidies for electrolytic lead and zinc were given up, followed by the lifting of control on September 2 while subsidies for electrolytic copper were done away with on Oct. 1 the same being placed in the free market.

Naturally, prices of these non-ferrous metals will be eventually decided in the long run in free market by cost expenses, but in general prices being swayed by specific economic circumstances such as war etc. will be determined by the influence of demands rather than of supplies. Furthermore, these political and economic conditions give rise to active movements in international market. In the non-ferrous metals which are international articles of commerce, there is every tendency that the Japanese market with a limited supply capacity in international markets has to follow the New York city market in U. S. A. which is the largest producer and consumer in the world.

With reference to pace of price movements since 1926 for electrolytic copper, lead and zinc both in America and Japan, we find the following to say; (all these prices are after spot quotation in mines.)

There is a tendency that prices of copper, lead and zinc in America preceed in rise and fall the prices of general goods. In this sense, it may be said that the recent sudden rebound of prices spells the boom of the stock market and prosperity of America in general.

The attached table gives prices movements subsequent to April the year 1950.

Entering the year 1950, prices of goods in America have made striking advance and there is every tendency for the increase of demand for non-ferrous metals which are

needed as strategic goods with the intensification of cold war. Besides the securing of domestic resources, America is concentrating her efforts to secure metal resources overseas, by passing Strategic Goods Storage Law, including copper, lead, zinc, and tins. It is said that the question of customs duties resumption has been put off, but prices will remain strong under the pressure of international conditions.

The market price of electrolytic copper which was quoted at ¥131,000 in 1949 year has shown ascending graph on the right due to the decrease of old copper and to that of copper scraps used as the materials for electrolytic copper. The prevailing makers' quotation was ¥158,000 in June, but due to international market activity subsequent to the Korean hostilities, it jumped up to ¥165,000 as soon as we entered into July, and to ¥170,000 in the course of the same month. The recent export negotiation reached 28.5 cents, and the market price underwent a great change, the same being quoted at ¥200,000 (¥195,000 in Osaka). On September 14, the Japan Mining Industry Co. set up a price of ¥210,000 in cathode while negotiations were made on the 18th along this line. This price may be regarded as approaching 26.50 cents (¥209,000 per ton) at the present New York quotation which is 24.50 cents plus 2 cents customs duties (Oct. 1950). In response to this tendency, the Besshi and other mines set-up prices quoting ¥22,500 (In many mines set-up prices have not been published), and the city quotation actually reached ¥230,000, and in some cases, export negotiation was made even at 35 cents f. o.b. (the same being 30–31 cents for export to America). However, generally speaking, at present the price has reached its peak. It is expected that price will not possibly go up any higher.

B) Lead and Zinc.

International prices for these metals were high, and our cost prices were higher than controlled prices, which created strong desire to raise controlled prices, and in April, last year, with the abolishment of subsidies, consumption prices were raised, so that both producers and consumers prices were raised ¥80,800 for lead and ¥58,000 for zinc respectively. On September 2, the price control was given up. The price for zinc after the abolition of its control which was ¥73,000 rose to ¥76,000 at the end of the year which again at the end of the present year suddenly rose from ¥88,500 in Feburary to ¥100,000 in June, in fact, in the middle of May, a high quotation such as ¥120,000 was made at a time. The market remained somewhat quiet later, but in July it showed a sharp rising curve, and in August, it went up close to ¥158,000 or ¥160,000 as in response to the American set-up price of 15 cents. At present, ruling prices in Japanese markets are ¥180,000 and ¥137,000 at the mines.

The price of lead in America showed firm tendency rising from 11.17 cents in the past to 12 cents in May while in the middle of August, the set-up price of lead went up as high as 14 cents. However, the price of lead in Japan evidently due to stocks on hand of old lead has not shown such a high rise as that of copper and zinc. The March quotation at ¥70,000 or below gradually went to ¥85,000 in August. Its high price came much after that of copper and lead. At present, its set-up price in mines is ¥120,000 and market price went up in its heels gaining the same quotation.

Table 17. Index of Japanese Market.

(per ton gram)

	Electrolytic Copper		Electrolytic Lead		Electrolytic Zinc	
	¥	Index	¥	Index	¥	Index
1938	1,050	100	558.3	100	853.01	100
40	1,350	128	480	85	610	71
41	1,800	171	〃	〃	〃	〃
45	〃	〃	877.50	157	1,230	144
46	12,000	1,143	3,633.33	650	4,566.66	535
47	31,750	3,023	13,391.66	2,492	11,666.66	1,367
48–1	49,000	4,666	23,000	4,119	18,000	2,110
48–7	102,014	9,715	59,103	10.586	46,237	5,420
49–1	〃	〃	〃	〃	〃	〃
4	〃	〃	80,810	14,474	58,330	6,802
9	〃	〃	〃	〃	〃	〃
10	126,000	12,000	〃	〃	73,000	8,557
11	131,000	12,476	〃	〃	〃	〃
12	〃	〃	〃	〃	76,000	8,909
50–1	131,000	12,476	80,810	14,474	86,000	10,081
2	132,500	12,619	〃	〃	88,000	10,316
4	〃	〃	〃	〃	88,500	10,375
5	137,000	13,047	〃	〃	〃	〃
early middle June	150,000	14,285	80,000	14,329	102,000	11,957
end of June	170,000	16,190	〃	〃	116,000	13,598
early July	170,000	16,190	83,000	14,866	116,000	13,598
middle July	〃	〃	〃	〃	〃	〃
end of July	173,000	16,476	〃	〃	〃	〃
early August	176,000	16,761	88,000	15,752	〃	〃
middle August	〃	〃	〃	〃	〃	〃
end of August	〃	〃	〃	〃	〃	〃
early September	194,000	18,476	〃	〃	120,000	14.067
middle September	209,000	19,904	100,000	17,911	137,000	16,060
end of September	〃	〃	〃	〃	〃	〃
early October	225,000	21,428	120,000	21,493	〃	〃
middle October	〃	〃	〃	〃	〃	〃

Index for American Market.

(From Association Date)

The Price in quoted mines (per lb.)

	Electrolytic Copper		Electrolytic Lead		Electrolytic Zinc	
	¢	Index	¢	Index	¢	Index
1938	10.00	100	4.74	100	4.99	100
40	11.40	112	5.18	109	6.73	134
41	11.87	117	5.79	122	7.37	157
45	〃	〃	6.50	137	8.65	173
46	13.92	137	8.11	171	9.15	183
47	21.15	209	14.67	309	11.01	220
48–1	21.37	211	15.00	316	11.08	222
48–7	21.49	212	17.81	375	12.46	249
49–1	23.20	229	21.5	453	17.50	350
4	22.59	223	15.33	323	14.50	290
9	17.625	174	15.10	218	10.00	300
10	〃	〃	13.67	288	9.35	187
11	18.266	180	12.61	266	9.85	197
12	18.50	183	12.00	253	9.75	195
50–1	〃	〃	〃	〃	〃	〃
2	〃	〃	〃	〃	〃	〃
4	20.50	203	11.17	235	10.50	210
5	〃	〃	12.00	253	12.00	240
early June	22.50	222	11.00	233	15.00	300
end of June	22.50	〃	11.00	〃	15.00	〃
early July	22.50	〃	11.00	〃	15.00	〃
end of July	22.50	〃	12.00	253	15.00	〃
early August	22.50	〃	13.00	274	15.00	〃
end of August	24.50	242	14.00	295	15.00	〃
early September	24.50	242	15.00	316	17.50	350
end of September	24.50	242	16.00	337	17.50	〃
early October	24 50	〃				

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Conclusion

As mentioned above, the prosperity of non-ferrous metals industry has attained its peak, but there remains a considerable number of questions in this industrial circle.

1. During the war period after the Manchurian affairs, their increased production was continued at the request of the Military, especially subsequent to the Pacific War mining was made at the sacrifice of prospecting which forms the basic factor in maintaining the life of mines, causing the extreme ruination of resources and facilities which coupled with subsequent difficulty of raising funds made it very hard to restore these mines as desired.

2. After the war, there was kept a large volume of slags connected with the military requisition which was utilized in large volumes as materials aiding the regaining of the volume of refined products, but the stored up slag is recently running short, and the time is fast approaching when we can not expect more than usual recovery rate of scrap. (The time in reference to copper is expected at the quarter of 1952.) Furthermore, the c.i.f. price of foreign mine ores in Japan at present is extremely high compared with prices of domestic ore, and there is every necessity for increase of products in mining section and for rationalization in refinery section. (At the same time, it is desirable to make a systematic plan for importation of ores.)

3. The fund for making facilities is needed in a large amount for a long term. But it is coldly treated by U. S. A. Aid Counterpart Fund, nor the city banking accomodation is very brisk and positive. The increase of own capital is full of difficulty in these days when the stock market has not still emerged out of the state of sluggishness, nor is there much room left for issuance of debentures.

4. Looking back further, one will find that up to the year 1949, the industry suffered from huge stock-piles, nor is the recent prosperity caused by rationalization of the industry, but it is rather caused by the increase of overseas demands and the abnormal rise of overseas market prices. Consequently, instead of being intoxicated with present prosperity, rationalization must be spurred on, so that at normal times we may make our exportation on commercial basis possible. It is also necessary for us to develop our home demands.

Further, it is recently talked about in the Price Board to introduce again the price control system, (creation of price advisoryship), undoubtedly actuated by the sudden rise of market prices of non-ferrous metals, particularly centering around that of zinc. However, the present prosperity has been brought about only recently, and there seems to be little necessity to interfere with keeping of some amounts of profits in this industry that requires the huge accumulation of own capital, and there seems to be little necessity to resort to re-control as long as the rise in their prices does not cause of the trouble to the export other secondary products. As long as free

economy is premised in general, price control does not stand to logic. Whether one likes it or not, the approach to international prices is a necessary phenomenon. (As a matter of fact, however, of late these enterprises give priority to home demands keeping down exports.)

In short, let me state here, that even with great many problems still pending, the non-ferrous metal industry is at present taking the upward course. Further, it appears to the writer that the industry should be actively fostered in these days, viewing from the standpoint of rendering protection to the basic industries of Japan.

RECENT TREND IN SUPPLY AND DEMAND OF SULPHITE PULP

I

The situation with the pulp industry in the postwar Japan is characterized by the following phenomena:

(1) The loss of Saghalien, Korea, Formasa and other colonies meant the loss of one-half of the productivity, and dealt the industry an almost fatal blow.

(2) Worse still, sulphite pulp (SP) industry on which the production of high quality paper depended was hit hardest, while ground pulp (GP) industry which was producing lowgrade paper, rapidly recovered from the prostration as it involved comparatively little difficulties in technical skill and fund. The slow recovery of the SP industry due to difficulties in these matters changed the character of our paper industry and the emphasis necessarily began to be placed on the production of inferior quality paper.

(3) Thus, in the postwar days demands for paper were met in a way by the increased production of GP as far as quantity is concerned, but the question of quality was yet to be solved.

The question of shortage of SP which was already the subject of much talk then was taken up for study by the paper manufactures themselves, but the universal shortage of pulp touched off by the outbreak of the Korean hostilities, coupled with the heavy demand on pulps for the chemical textile industries, which surpasses that of paper industry, added to the complexity of the situation.

Apart from the validity of the pulp industry's boast that "from chipping of log to the collection of proceeds of manufactured goods, all within 30 days", the noteworthy fact is that unlike other industries which have to spend their almost entire efforts in raising operation fund in the face of increasingly longer term sight bills and accumulation of credit sales, the pulp industry is enjoying a prosperity. In short, this is the natural result of the extreme unbalance between supply and demand of pulps brought about by the acute demand on high-class sulphite pulp placed by the the paper industry for manufacture of high class paper and by the chemical textile industries which are now headed for increased production.

Now let us touch on the current situation of the pulp industries chiefly with eyes on the demand and supply of paper pulp and rayon pulp (RP). Before proceeding further we feel it necessary to speak about the problem of the overlapping of facilities for manufacture of SP and RP by way of giving a basic idea. Intrinsically there is no difference between SP and RP, both being the products of the sulphurous-acid processing. Only difference is that RP

which is used exclusively for manufacturing rayon is refined pure white pulp with no less than 88 per cent of alpha fibrin in it all impurities removed from it by a elaborate process, while no such purity is required in SP which is used for making paper.

II

Basically, the real explanation for the present shortage of pulp for paper and rayon lies in the loss of production facilities as we have stated, but we have to go a step further and look into the actual condition now prevailing here.

(1) Consumers stand.

First, let us view the situation from the standpoint of consumers. The so-called "publication boom" which created heavy demand for all kinds of paper regardless of quality immediately after the close of the war is now only a past dream. In other words, with the exception of newsprint and high-quality products the demands for paper have been roughly met, and we have now reached the stage of selective demand. The price of paper, for instance, is customarily quoted for certain unit weight such as pound or *Kan*, and such varieties as would have greater surface dimension of pure white color for a unit weight, that is, whiter and thinner varieties are given preference. To given a thin white paper a proper strength it is necessary to add a considerable amount of SP to the mixture, otherwise the quality of the products will be a poor one although such amount varies with the variety of paper produced. This fact itself serves to increase the demand for SP. The trouble is that the supply is inadequate. As may be seen from Table I, the supply of paper pulp in the fiscal year 1950–51 is estimated at 57,614 tons short of demand. The actual situation is still worse, for the production program of rayon pulp and sulphite pulp estimates their production at 329,720 tons, or 92 per cent of the entire productivity which stands at 360,180 tons for such pulps. This means whole facilities are to be operated practically in full.

Table I. Estimates of Supply and Demand of Pulps for the fiscal year 1950–51.

(ending with March 31, 1951)

Unit: English ton

	Productivity	Estimated production	Estimated demand	Balance (shortage)
Rayon pulp	360,180	97,000	134,600	37,600
Special rayon pulp and low grade pulp		8,000		
sulphite pulp		224,720	300,334	57,614
Soda pulp	58,836	10,000		
Kraft pulp	73,740	65,260	69,776	4,516
Ground pulp	512,604	345,084	345,084	0
Others materials for paper		245,606	245,606	0
Total	1,005,360	995,670	1,095,400	99,730

(Source: Pulp Industry Association)

The shortage in the absolute amount will have to be covered by imports, whether we like it or not. However, the worlds' supply of pulp is seriously short, almost beyond our imagination. The Paper Trade Journal's report of June 22 that Sweden, the typical pulp exporting country, had to import pulps from the Continent to feed its own paper industry, presents a vivid picture of the condition obtaining recently. This circumstance has caused the price of imported pulp to shoot up beyond all reasonable bound. In the absence, however, of any reliable data in this connection we are unable to know definitely how the price stands now, but reportedly upward of $200 is quoted for a ton of RP and about $170 for SP, that is, more than 50 per cent higher than the official prices of the domestic products in Japan.

The paper manufactures of Japan, therefore, find themselves in a sort of dilemma; if they want to use imported pulp they have to pool it with the less expensive indigenous material in order to keep down the cost, and for that reason the demand for indigenous SP would increase.

Secondly, let us study the standpoint of the chemical textile industry. As shown in Table I the demand for rayon pulp is estimated at 134,600 tons for the 1950 fiscal year. The figure is derived from the estimated requirements of stable-fiber goods in the same period. As was the case with paper pulp, the domestic production fails to cover the demand and we have to rely on the import of 37,600 tons in order to meet the demand. A greater demand for textile goods is foreseen because of the decreased crop of American raw cotton, and there has been a sharp increase in demand brought about by the Korean conflict. Thus the actual demand for material pulp is expected to run upward of the above estimate. Compared with paper manufacturers, the textile industry is considered more favored inasmuch as pulp represents only 20–30 per cent of the whole cost, while with paper industry such percentage reaches 50–60 per cent. Besides, the price of its products has gone up 2.5—2.6 times since early March 1950 year, or 1.7—1.8 times since the outbreak of the Korean hostilities, while on the other hand the official price of material pulp has been unaffected by the Korean hostilities. Its position, therefore, is more favorable than that of paper industry and is expected to be able to absorb any increases in the price of imported pulp. It is thus headed for a increased production, as may be noted from the following Table II.

Table II. Trend in Demand and Supply of Rayon Yarn and Staple Fibers.

(Unit: 1,000 lbs))

	Production	Shipment	Stock
(Rayon yarns)			
Jan.	6,729	8,208	15,125
Feb.	6,656	7,706	14,137
March	7,419	4,137	17,338
April	7,552	9,009	15,883
May	8,065	11,300	12,715
June	8,428	8,428	12,661
July	8,981	10,363	12,280
August	9,476	12,256	8,500

(Staple Fibers)			
Jan.	4,583	—	11,524
Feb.	5,034	5,892	10,666
March	5,291	5,707	10,250
April	5,389	10,116	5,523
May	5,850	8,916	2,457
June	6,320	7,141	1,636
July	6,320	6,841	1,527
August	7,002	7,786	1,679

(2) Suppliers views.

Suppliers of paper pulp and rayon pulp are listed in full in Tables III and IV. They have been trying their best to keep their facilities operating as fully as possible throughout the period of extreme shortage of pulp in the post-surrender period. Makers of SP were consuming almost all of their products for their own production of paper and were unable to turn out RP, while makers of RP, deviating from their original aim, have been producing SP for paper along with rayon pulp in order to meet the acute demand created by the postwar shortage of paper.

Table III. SP Makers' Capacity for Monthly Production.

Jujo Paper Mill	2,120 tons
Tomakomai Paper Mill	3,000
Honshu Paper Mill	1,315
Hokuetsu Paper Mill	1,800
Toyo Spinning Co.	1,060
Chuetsu Pulp Mill	570
Daishowa Paper Mill	50
Kochi Paper Mill	240
Takachiho Paper Mill	830
Total	11,525

Table IV. RP Makers' Capacity for Monthly Production.

Kokusaku Pulp Co.	4,680
Tohoku Pulp Co.	4,444
Hokuetsu Paper Mill	1,600
Kokoku Rayon Pulp Co.	2,220
Sanyo Pulp Co.	2,960
Nihon Pulp Co.	2,590
Total	18,490

Recently chemical-textile industry has been showing a firm front, but at certain period in the past it was more to the profit of makers to turn out SP than RP, for the aforementioned overlapping of facilities redered it possible for makers to produce either of them at will as may be demanded by the varying situations. Nevertheless they are now showing a marked preference for production of RP only, for perfectly understandable reasons.

First, rayon pulp can be produced far more profitably than paper pulp.

It is true that, with the price control remaining as it is, (with SP, even its distribution is still under control) there is no appreciable difference between the manufacture of SP and RP as regards profit, but with the production of rayon pulp, ¥1.40 is added to the price of products per pound for every 1 per cent of alpha fibrin in them, which means so much is added to the marginal profit. This affords a considerable inducement to its makers. The official price which is set at ¥21.30 per pound presumes that the product contains 88 per cent alpha fibrin, but most of rayon pulp contains usually 90–91 per cent of it. The actual market price, therefore, is scaled up by

a certain amount representing the difference of such percentage namely, by ¥1.40 per one percent. This means that the product is sold at ¥24.10—¥25.50 or ¥2.80—¥4.20 higher than the official price. The increase in the cost arising from the various factors attendant on heightening the percentage of fibrin contents by 2–3 percentage, is estimated at 10 per cent of the present official price, or less than ¥2.00 which means that the balance of ¥0.80—¥2.20 goes to the producer as the marginal profit acruing from this slide scale system.

Secondly, the rayon pulp used for making chemical-textiles for export is excluded from the price control. This fact which forms a lawful loophole for profit-making, coupled with the recent boom and consequent unbalance between demand and supply, has naturally made the production of RP a highly attractive business.

For the above two reasons, rayon pulp makers are desiring, and are actually preparing for, the priority production of rayon pulp, but so long as the acute shortage of necessary equipment for production of paper-pulp remains as a sterm reality, the paper manufacturers have to depend upon the makers of rayon pulp for supply of materials. Herein lies the complexity of the problem. Their position is made more difficult by the fact that the rival they have to compete with in acquiring supplies of pulp is the chemical-textile manufacturer. On the other hand the pulp makers who stand above them both profit by such competition. Moreover, difficulties of paper specializers mounted as rayon pulp makers began the through streamlining process of making of paper from pulp. It has never been unusual for pulp makers to produce for their own consumption, but it is natural that the paper manufacturers to whom the shortage of pulp for paper has always been the cause of headache should be alerted by such practice of pulp makers and keep vigilant watch over the way in which the produced pulp is distributed. It is on this account that the problem was brought to the fore.

Table V, showing the performance record of the 6 rayon pulp manufacturers reveals that they have been fulfiling their delivery obligations, although certain increases are seen in for own consumption as claimed by paper manufactures. Their production of pulp including RP climbed, but increasingly larger volume of their products are being used by themselves which would necessarily mean that so much heavier pressure is placed on paper specializers who are eagerly expecting to increase their output.

Table V. Performance Record of SP Production in 1950.

(in English ton)

	Table output	Volume produced by 6 mills	For self-consumption	For Supply outside	Products of other mills in market	Note output of RP	Note output of RP by 6 mills
Jan.	18,068	12,496	2,972	9,458	760	2,278	14,774
Feb.	15,858	9,975	2,403	8,668	973	7,010	16,985
March	16,315	10,420	2,956	7,660	748	6,031	16,451
April	19,494	12,728	3,338	9,013	993	5,727	18,455
May	12,971	6,620	2,566	4,821	975	10,705	17,325
June	18,905	11,954	3,857	7,680	1,357	7,085	19,039
July	17,738	10,836	3,242	7,143	1,261	8,397	19,233
August	15,544	8,983	3,292	5,755	1,056	8,394	17,377
Sept.	16,478	8,438	2,408	4 398	1,255	11,540	19,978

Rayon pulp manufacturers, however, claim that the increase in the volume for self-consumption is justified for the following reasons:

First, they claim that the price policy is faulty.

Manufacturers get more profit from the sale of manufactured paper than from that of pulp for paper manufacturing, and therefore they demand a raise of the present price of pulp so that proper balance be kept between their profits. To meet this situation, the price of SP is expected to be hiked by approximately 20 per cent, but it is a fact that the cost of pulp falls lighter on the manufacturers turning out paper on a through processing basis than on those making only paper from the purchased pulp. It may be possible to secure the supply of pulp temporarily through price operation by raising its price, but such measure is not effective to put an end to the practice of self-consumption of pulp. Thus, as a more basic step, they demand the rationalization of the pulp industry as a whole. In other words they want to expand and strengthen the enterprise to include the secondary production instead of producing and selling raw materials only, giving thereby variety in its activity. They may have it all right as long as there exists such unbalance between supply and demand as we have at present, but they fear that if the situation of the supply of pulp be eased in future by the increase of facilities, the manufacturers specializing only in pulp may find it impossible to operate their business profitably in competition with the through processing makers.

Such being the case, makers of rayon pulp are doing the business in a most rational way. They are taking the leadership in the chemical textile industry by producing rayon pulp, while on the other hand they are building up the foundation for the through processing of paper at the cost of paper specializers. Paper manufacturers, therefore, are gradually preparing for the self-supply of pulp, discarding the past watch-and-see policy.

III

Confronted with such a situation in the pulp industry as stated above, let us here examine what steps are being actually taken.

First of all, we must of course mention an expansion of equipments, now under way. All equipments now being expanded under schedule are, as shown by Table VI, intended for sulphite-pulp except those at the Yufutsu plant of the Kokusaku Pulp Co., only which are intended for kraft-pulp. It is not known yet, however, which of those equipments will be used for rayon-pulp or paper-pulp, but it is apparent that those equipments now being expanded by the paper manufacturers will be made available altogether for paper-pulp, while those by the pulp makers are so flexible in nature, it may be said, that they can be used for either purpose, like those they already have.

In any case, it is expected, though only ostensibly, that an increased yearly output of around 100,000 tons of sulphite-pulp will be realized by the projected expansion of equipments. But, actually, because of a possible difference in the net pulp yield according to the quality of timber used, and so long as there is felt, as at present, a shortage of pulp machines and bleaching equipments, even granting digesters only are expanded, a somewhat conservative estimate of a 80,000—ton increase is being made by the makers concerned. On the other hand, a total shortage of 95,000 tons in the supply of rayon and paper-pulp as against the demand is foressen for the year 1950, and even with expanded equipments now under way, that shortage would barely be met, and nothing more.

Table VI. Pulp Equipments now under Construction.

Name of Co.	*Plant*	*Capacity of wood furnace*	*Pcs.*	*Expected date of completion*
Kokusaku Pulp	Asahikawa	25 tons	1	Aug. 1951
Ditto	Yufutsu	5	2	Oct. 1951 (K. P.)
Tohoku Pulp	Akita	15	1	May 1951
Ditto	Ishinomaki	15	1	Jan. 1950
Jujo Paper Mill	Kushiro	10	2	Oct. 1950 March 1951
Ditto	Yashiro	10	2	Oct. 1950 March 1951
Ditto	Fushiki	10	2	Sept. 1951
Kokoku Rayon	Toyama	15	1	March 1951
Sanyo Pulp	Iwakuni	15	2	May 1950
Nippon Pulp	Nichinan	15	1	Oct. 1950
Honshu Paper Mill	Fuji	15	2	Aug. 1951
Hokuetsu Paper Mill	Pulp	10	1	March 1951
Chuetsu Pulp	Nomachi	5	2	Feb. 1951
Takachiho Paper Mill	Fukuoka	8.5	2	Oct. 1950
Kanzaki Paper Mill	Kanzaki	10	2	March 1951

Moreover, due to an expected increase of output in chemical textile industry for this year, an absolute shortage in the supply of pulp seems unavoidable, and we shall perhaps find the problem of imported pulp as remaining an important factor in this field this year as in the year 1950.

And even such means for amelioration of demand-and-supply relations by imported pulp can not be wholly depended upon, so long as the shortage of pulp has now become a global phenomenon. In point of price, too, it is said that all manufacturers, except the three major mills of the former Oji affiliation and a few others where the so-called mass production is possible, find it unable to make both ends meet. Another factor which should not be underestimated is that the North European Countries are more or less diffident toward the present barter system for the need of dollar funds, which fact, though it may just be a matter of procedure, serves an ample warning to those who rely too much on importation.

Secondly, we may well take into consideration the problem of soda-pulp which has come to the fore as a step of self-protection of paper manufacturers. The output of soda-pulp, now in vogue as a means of survival of the medium and minor paper makers, is steadily rising, but the current production program for 10,000 tons set lower than an over-all production capacity of 58,836 tons, as shown in Table I, is far too inadequate, and we feel consideration ought to be given toward realizing a further increased output. However, soda-pulp, while having an advantage in that decayed timber of general kinds can be utilized, has the greatest drawback in that expensive caustic soda is employed. Besides, when taking into consideration the current tendency of high cost of caustic soda, the big problem is whether the production of soda-pulp can pay or not. Although it may be possible to bring down the cost through unification of processes up to the stage of paper manufacture, yet the present minor-size of their paper manufacturing equipments will remain to be a barrier, and in no way offer an effective solution toward amelioration of the demand-and-supply relations in pulp, particularly in paper-pulp.

The third point is a revision of price.

Temporary procurement of SP may be possible, as stated above, by a revision of the prices, but certainly not much expectation should be held so long as the projected unification of processes up to the stage of paper manufacture and the basis of direction toward production of RP remain outside the frame-work of price policy, as at present.

Fourthly, although under the scheme of the Ministry of International Trade and Industry, the operation-rate for paper-capacity of pulp makers are to be cut down to that of paper specializers, yet it is very questionable that such a scheme would really be of any worth before the inevitability, as mentioned in the preceding paragraph, of unification of processess of work. Granting that the equality of operation-rate to be realized, the resultant increase in the volume of supply towards paper specializers could never be a fundamental remedy to

alleviate the absolute shortage of SP. Merely as a stop-gap measure to help ease somewhat the current situation of sellers' markets, we find its value at any rate.

IV

We have made above some observations concerning the demand-and-supply situation in sulphite pulp. Now we wish to touch upon its future prospect, as we see it, and thereby bring our views to a conclusion.

First, about the question of how long such a state of unbalance between demand and supply will last, we are unable to foresee any large measure of easing in the field of supply merely through the current expansion of equipments. On the other hand, in the field of demand, in case the current world-wide uncertainty about cotton spreads, leading to a possible consequence of less importation of raw cotton, we may except a further brisk demand for rayon and staple fibre which can be mostly made of domestic resources, and, with it, a sharp demand for pulp, leading thus to a further aggravation of inequilibrium between demand and supply. Meanwhile, if the hope of the U. S. Secretary of Agriculture for "securing 16,000,000 bales of raw cotton for the this fiscal year" can be realized by an expansion in cotton cultivation area, the output will be very near to that for 1949 fiscal year which made some fine results in cotton yield, coming as the fourth on record in the cotton history of the U. S., and the demand for chemical textiles which themselves have a substitute character for cotton will surely be dropped. The situation of American cotton is tinged with much political color, so it is impossoble to make a hasty conclusion. But, supposing a large increase in production, if realized, will begin to show its effect in the field of supply from November this year, we may say for certain that the current state of things will go on till then. Moreover, it may not altogether be impossible for rayon and artificial fibers to open a new field, by taking advantage of fluctuations of production of cotton, and, with it, the demand for pulp will also increase. In contrast to this, the paper manufacturing industry, now placed under such unfavorable circumstances, stands in too disadvantageous a position in raw material to compete with the chemical textile industries. Unless the equipments for paper-pulp manufacture are expanded, there will lie difficulties ahead in the way of production of paper of superior quality.

In the meantime, even taking into consideration some unforeseeable change in objective circumstances, we think such an abnormal state as we have today will return to normalcy sooner or later, and we may lay stress on the following possibilities. That is to say, stabilization of enterprise by through processing now being contemplated by the pulp or paper makers would be the most rational and basic prerequisite. Although we may say such a situation has been brought about sooner than expected by the competition between SP and RP, the RP makers of today would gradually come to assume a character somewhat like paper or chemical textile manufacturers, besides dealing primarily in RP, while paper

makers themselves would perhaps turn, in style and character, into paper-and-pulp makers. And, in such an event, the problem of raw timber, which has been a long pending issue, would quite naturally come up to the fore. Therefore, the basis of the pulp and other related industries should, unless importation of timber is realized, be such as to conform to the limits of permissible deforestation of the forest resources in this country

—(*November 1, 1950*)

STATISTICAL TABLES

Remarks:

1. Some figures are subject to adjustment by the later informations.
2. Mark △ shows preliminary figures.

Year and Month	Industrial Activity and Production(1)				Price(2)	
	Industrial Activity	Industrial Production	Minerals	Manufactures	Retail Price	Wholesale
	1932—36=100				July 1914=100	1934—36=100
1948.....	74.3	58.2	90.1	54.6	22,820.5	12,778.5
1949.....	93.7	77.5	103.9	74.5	37,282.9	20,876.4
1949—Apr. ...	95.5	79.5	106.2	76.5	37,878.7	20,602.0
May ...	93.7	76.3	92.5	74.5	37,386.9	21,010.3
Jun. ...	94.2	77.8	106.7	74.6	36,036.6	20,933.8
Jul.	94.5	80.7	108.9	77.6	37,561.8	20,959.0
Aug. ...	92.4	79.5	103.9	76.8	38,882.9	21,308.0
Sep. ...	93.7	79.0	106.5	75.9	39,683.4	21,690.8
Oct. ...	97.6	80.6	104.4	78.6	38,745.6	21,903.5
Nov. ...	96.2	79.6	105.5	76.7	38,249.6	21,912.0
Dec. ...	100.0	82.2	108.9	79.2	37,320.6	21,886.5
1950—Jan. ...	96.5	79.2	102.1	76.6	37,117.3	22,771.1
Feb. ...	94.8	79.7	104.8	78.9	35,733.9	22,618.0
Mar. ...	101.6	84.1	90.2	83.4	34,719.6	22,677.5
Apr. ...	104.8	88.3	108.7	86.0	34,710.8	22,660.5
May ...	108.8	92.0	110.5	89.9	34,371.4	22,762.6
Jun. ...	109.6	93.6	111.5	91.6	34,387.0	22,890.2
Jul.	109.2	94.5	114.4	92.2	34,664.6	24,191.6
Aug. ...	109.7	95.8	106.0	94.6	37,515.3	25,357.0
Sep. ...	△110.5	97.8	111.5	96.3	38,219.6	25,926.9
Oct.....	—	—	—	—	38,100.9	—

(1), (7).....ESS
(2), (3).....The Bank of Japan
(4) .....The Oriental Economist
(5), (6).....The National Economic Research Institute

INDICES

Black Market Price of Consumer's Goods	Black Market Price of Producer's Goods	The Bank of Japan Note Issue[3]	Share Price[4]	Wage (Manufactures)[5]	Employment (Manufactures[6]	Export and Import[7]	
						Export	Import
September 1945=100	August 1946=100	Millions of yen	December 1947=100	1935=100	1935—37 =100	Thousands of dollars	
717.0	479	251,158	193.4	—	126.1	258,271	683,018
758.0	444	312,811	365.4	—	—	510,048	906,208
820	483	315,932	386.6	16,305.3	135.6	45,165	74,793
807	475	305,938	463.4	16,884.4	134.5	53,933	97,486
801	466	300,628	379.9	16,524.8	133.5	43,334	105,948
786	443	295,493	381.2	16,630.8	129.6	46,761	85,708
765	423	295,580	432.5	16,949.3	128.9	40,453	77,268
733	405	298,202	432.9	16,894.5	126.9	40,753	72,615
704	385	306,252	362.8	17,597.7	126.2	30,743	61,478
685	378	303,822	316.8	17,922.7	126.7	40,263	53,712
655	376	355,311	285.2	18,556.2	127.2	49,707	49,682
625	375	320,397	242.4	18,420.2	—	39,473	72,415
573	364	311,310	265.8	16,998.3	—	51,160	80,257
533	338	311,343	238.7	16,590.1	125.3	52,999	84,821
492	327	319,645	239.6	17,156.3	126.5	61,269	92,310
481	322	310,405	226.5	17,002.4	126.4	52,011	75,449
480	324	311,185	211.4	17,905.2	125.9	65,816	66,875
501	337	319,809	244.9	18,492.0	125.1	63,019	56,939
571	368	324,618	281.8	18,254.0	125.1	71,931	68,171
553	400	328,781	252.3	18,526.9	—	75,521	67,927
492	—	—	253.6	—	—	△87,897	△72,163

(1) Main Accounts of the Bank of Japan

(Survey of the Bank of Japan. In millions of yen)

Year and Month	Banks Note Issue	Gov't Deposits	Other Deposits	Advances to Gov't	Loans	Gov't Bonds and Debentures
1947–Dec. ...	219,141	6,703	20,953	53,201	32,301	145,866
1948–Dec. ...	355,280	14,002	22,660	83,509	51,901	247,718
1949–Jan. ...	341,575	12,287	22,960	84,151	61,091	230,274
Feb. ...	322,449	26,097	21,555	80,821	72,510	211,805
Mar. ...	312,547	48,349	23,071	76,404	67,943	205,199
Apr. ...	315,932	45,433	25,210	91,404	74,811	194,816
May ...	305,938	44,433	21,641	101,404	60,103	197,908
Jun. ...	300,628	39,043	21,319	101,404	69,714	173,353
Jul. ...	295,493	55,468	18,964	101,404	63,887	179,865
Aug. ...	295,579	63,297	17,390	98,404	79,935	177,106
Sep. ...	298,201	27,973	19,657	98,654	90,579	138,723
Oct. ...	306,252	27,455	18,797	99,693	93,951	109,413
Nov. ...	303,822	20,266	20,688	95,793	83,418	123,067
Dec. ...	355,311	12,036	22,127	100,004	66,237	188,900
1950–Jan. ...	320,398	14,512	18,216	87,255	65,592	176,235
Feb. ...	311,811	34,762	15,794	84,455	77,055	170,799
Mar. ...	311,344	42,402	20,828	81,810	66,581	163,497
Apr. ...	319,646	33,275	18,220	70,225	70,962	160,598
May ...	310,404	35,493	17,031	70,225	85,025	138,772
Jun. ...	311,185	28,211	17,031	70,225	85,770	136,008
Jul. ...	319,809	30,911	18,599	108,225	75,658	121,449
Aug. ...	324,618	25,239	18,214	83,180	95,765	120,647
Sept. ...	328,781	41,891	18,249	78,180	108,376	127,628
Oct. ...	344,689	49,974	18,537	70,014	94,601	136,630

Source: Financial Statistics Monthly.

(2) All Banks Main Accounts in Japan (Except Bank of Japan)

(Survey of the Bank of Japan. In millions of yen)

Item / Year and Month	Liabilities			Assets				
	Capital Stock	Deposits	Borrowed Money	Loans	Call-loan	Securities	Deposits with Other	Cash and Checks
1948–Dec.	14,729	505,349	55,875	381,348	4,155	117,033	24,311	72,660
1949–Jun.	15,080	582,533	61,590	459,153	3,206	121,237	19,539	82,983
Jul.	15,490	615,422	54,177	490,661	5,212	119,784	20,703	76,089
Aug.	15,490	634,299	63,513	518,628	1,102	118,839	19,908	80,304
Sep.	16,065	711,382	75,759	563,353	4,993	117,040	21,451	129,845
Oct.	16,065	669,845	104,024	588,624	3,190	114,870	19,073	98,301
Nov.	16,070	700,369	101,000	612,231	4,621	115,200	20,292	103,577
Dec.	16,170	792,018	90,728	679,503	5,206	106,147	28,412	121,156
1950–Jan.	16,171	769,701	90,497	679,132	5,834	106,731	22,574	106,994
Feb.	16,171	774,137	106,075	706,460	4,448	106,673	20,267	106,677
Mar.	16,281	876,308	103,538	745,841	5,776	105,858	24,807	163,175
Apr.	17,298	839,481	113,226	769,030	6,692	107,567	21,473	114,127
May	18,353	848,991	118,138	777,131	4,162	111,232	22,004	122,029
Jun.	19,083	868,498	117,181	795,576	5,829	111,774	22,493	126,260
Jul.	19,083	887,981	106,424	816,160	9,008	115,982	22,580	121,635
Aug.	19,097	899,171	128,545	854,370	4,689	119,581	20,033	123,483
Sep.	19,107	964,212	138,346	877,908	4,241	125,571	20,477	175,586

Source: Financial Statistics Monthly.

(3) All Banks Loans in Japan (Except Bank of Japan)

(Survey of the Bank of Japan. In millions of yen)

Year & month \ Items	Unsecured Loans	%	Secured Loans	%	Overdrafts	%	Bills Discounted	%	Total	%
1948–Dec.	160,672	42.1	158,095	41.5	5,300	1.4	57,281	15.0	381,348	100
1949–Jun.	186,650	40.7	190,271	41.4	7,360	1.6	74,873	16.3	459,153	,,
Jul.	199,892	40.7	200,274	40.8	7,528	1.5	82,968	17.0	490,661	,,
Aug.	205,582	39.6	212,109	40.9	7,704	1.5	93,324	18.0	518,628	,,
Sep.	210,782	37.4	237,741	42.3	7,483	1.3	107,347	19.0	563,353	,,
Oct.	222,213	37.8	239,634	40.7	8,308	1.4	118,469	20.1	588,625	,,
Nov.	223,145	36.5	251,053	41.0	8,816	1.4	129,216	21.1	612,231	,,
Dec.	234,848	34.6	278,266	41.0	9,190	1.3	156,749	23.1	679,053	,,
1950–Jan.	232,518	34.2	278,846	41.1	10,458	1.5	157,310	23.2	679,123	,,
Feb.	238,861	33.9	291,251	41.2	10,693	1.5	165,655	23.4	706,460	,,
Mar.	248,887	33.4	305,919	41.0	9,952	1.3	181,082	24.3	745,840	,,
Apr.	258,791	33.6	308,622	40.1	10,037	1.3	191,580	24.9	769,029	,,
May	257,809	33.3	313,624	40.3	10,299	1.3	195,399	25.1	777,130	,,
Jun.	261,457	32.8	319,895	40.2	10,508	1.3	203,716	25.6	795,576	,,
Jul.	259,394	31.7	330,451	40.4	10,614	1.3	215,702	26.5	816,160	,,
Aug.	269,249	31.5	345,016	40.4	10,731	1.3	229,375	26.8	854,370	,,
Sep.	267,065	30.4	361,290	41.2	9,796	1.1	239,757	27.3	877,908	,,

Source: Financial Statistics Monthly.

(4) All Banks Deposits in Japan (Except Bank of Japan)

(Survey of the Bank of Japan. In millions of yen)

Year & month \ Items	Current Deposits	%	Ordinary Deposits	%	Time Deposits	%	Other Deposits	%	Total	%
1948 Dec.	147,581	29.2	209,803	41.5	73,420	14.5	74,545	14.8	505,349	100
1949–Jun.	153,806	26.4	231,482	39.7	105,796	18.2	91,449	15.9	582,534	,,
Jul.	154,205	25.0	238,860	39.0	116,375	19.0	105,982	17.0	615,422	,,
Aug.	155,458	25.0	242,618	38.0	129,109	20.0	107,114	17.0	634,299	,,
Sep.	203,389	29.0	252,234	35.0	139,183	20.0	116,576	16.0	711,382	,,
Oct.	173,131	26.0	245,121	37.0	151,089	22.0	100,504	15.0	669,845	,,
Nov.	178,611	26.0	249,711	36.0	164,103	23.0	107,944	15.0	700,369	,,
Dec.	208,675	26.3	249,711	31.5	164,104	20.8	169,529	21.4	792,019	,,
1950–Jan.	186,304	24.2	266,402	34.6	192,396	25.0	124,599	16.2	769,701	,,
Feb.	183,023	23.6	266,315	34.4	199,357	25.8	125,442	16.2	774,137	,,
Mar.	234,100	26.7	275,392	31.4	206,519	23.6	160,298	18.3	876,309	,,
Apr.	201,808	24.0	275,580	32.8	211,948	25.2	150,045	17.9	839,481	,,
May	199,629	23.5	274,509	32.3	219,905	25.9	154,948	18.2	848,991	,,
Jun.	203,076	23.3	278,592	32.0	232,739	26.7	154,091	17.8	868,498	,,
Jul.	203,321	22.8	280,125	31.5	242,492	27.3	162,043	18.3	887,981	,,
Aug.	207,782	23.1	275,661	30.7	251,485	30.0	164,243	18.3	899,171	,,
Sep.	254,941	26.4	276,928	28.7	259,737	26.9	172,606	17.9	964,212	,,

Source: Financial Statistics Monthly.

(5) Tokyo Wholesale Price Indices

(Survey of the Bank of Japan. Jan. 1948=100)

Year and Month \ Group	Edible Farm Products	Textiles	Metals and Metal Products	Building Materials	All Commodities	Producer Goods	Consumer Goods
1948 Av.	151.2	141.0	143.5	140.3	150.5	149.5	152.2
1949 Av.	269.0	255.8	205.3	198.5	239.6	224.8	255.7
1949–Jan.	244.0	204.9	195.9	197.5	224.4	210.3	239.5
Feb.	244.5	214.0	196.1	197.5	225.6	210.8	241.6
Mar.	246.8	214.8	196.1	197.5	226.2	211.2	242.5
Apr,	265.8	244.9	200.2	197.9	235.0	218.1	253.3
May	265.8	319.9	201.0	197.6	247.0	228.7	266.6
Jun.	278.4	311.6	201.0	197.8	246.1	229.0	264.6
Jul.	281.4	304.1	201.1	197.5	246.4	228.9	256.3
Aug.	275.5	325.6	201.0	198.1	250.5	234.0	268.2
Sep.	279.7	337.9	206.2	198.0	255.0	240.2	271.0
Oct.	278.8	341.6	217.5	199.6	257.5	244.7	271.3
Nov.	278.2	338.9	220.0	199.9	257.6	245.7	270.5
Dec.	278.4	332.4	221.0	200.3	257.3	246.3	269.2
1950–Jan.	292.4	319.8	245.9	216.3	267.7	265.9	269.6
Feb.	294.0	309.8	247.8	217.3	265.9	265.6	266.2
Mar.	297.2	306.1	249.5	214.5	266.6	268.2	264.8
Apr.	311.3	307.8	248.8	211.1	266.4	264.4	268.6
May	315.6	317.1	253.0	210.0	267.6	267.0	268.3
Jun.	317.6	325.1	259.4	200.9	269.1	267.1	271.3
Jul.	347.0	359.3	286.6	212.3	284.4	279.2	290.3
Aug.	327.6	409.0	310.2	227.9	298.1	302.9	293.0
Sep.	315.4	417.6	350.3	235.7	304.8	317.2	291.3

Source: Financial Statistics Monthly.

(6) Tokyo Official Retail Price Indices

(Survey of the Bank of Japan. Jul. 1914=100)

Year and Month \ Group	Foods	Fuels and Light	Clothing	Others	All Commodities
1948 Av.	23,820	21,515	15,699	26,073	22,820.5
1849 Av.	43,450	31,949	25,758	37,392	37,282.9
1949–Jan.	39,593	30,375	23,707	36,217	34,782.6
Feb.	40,162	30,375	23,707	36,312	35,051.6
Mar.	40,261	30,375	23,707	36,417	35,127.2
Apr.	45,786	30,375	23,707	37,048	37,649.5
May	45,080	30,504	23,703	37,133	37,386.9
Jun.	42,408	30,504	22,493	37,176	36.036.6
Jul.	45,731	30,504	22,493	37,581	37,561.8
Aug.	46,389	31,581	27,328	37,623	38,882.9
Sep.	46,213	32,935	29,762	38,580	39,683,4
Oct.	44,212	33,976	29,911	37,987	38,745.6
Nov.	43,189	34,621	29,542	37,889	38,249.6
Dec.	42,376	36,750	29,051	35,961	37,320.6
1950–Jan.	34,854	37,373	25,538	35,464	37,117.3
Feb.	41,347	37,411	25,471	34,467	35,733.9
Mar.	39,033	38,156	25,103	34,424	34,719.6
Apr.	39,574	35,113	25,103	34,257	34,710.8
May	37,706	35,113	27,024	34,448	34,371.4
Jun.	37,526	35,992	26,262	35,044	34,387.0
Jul.	37,822	34,571	26,379	35,717	34,664.6
Aug.	41,763	34,571	30,964	36,631	37,515.3
Sep.	42,002	35,546	30,888	38,340	38,219.6
Oct.	41,032	38,568	30,999	38,605	38,100.9

Source: Financial Statistics Monthly.

(7) Tokyo Free and Black Price Indices of Consumer Goods

(Survey of the Bank of Japan. Sep. 1945=100)

Year and Month \ Group	Staple Foods	Subsidiary Food	Seasonings	Drinks and Tobaccos	Textiles	Fuels	Others	All Commodities
1948 Dec.	604	660	602	—	1,398	1,340	710	—
1949–Jan.	640	678	613	694	1,378	1,345	716	775
Jun.	650	779	572	674	1,316	1,063	789	801
Jul.	601	787	568	669	1,291	1,020	778	786
Aug.	569	805	559	656	1,265	953	757	765
Sep.	542	755	543	642	1,190	903	743	733
Oct.	506	690	488	618	1,157	1,001	718	704
Nov.	492	655	475	570	1,138	985	702	685
Dec.	460	615	458	572	1,086	917	697	655
1950–Jan.	442	586	426	571	1,020	971	692	625
Feb.	392	527	395	544	824	969	664	573
Mar.	363	480	386	546	706	835	662	533
Apr.	362	441	373	557	529	750	629	492
May	346	441	358	548	500	750	624	481
Jun.	352	435	336	564	480	804	619	480
Jul.	415	442	321	564	534	804	617	501
Aug.	421	561	324	564	786	804	640	571
Sep.	361	544	320	576	721	859	672	553
Oct.	328	575	345	570	721	920	695	△492

Source: Financial Statistics Monthly.

(8) Tokyo Black-Market Price Indices of Producer Goods

(Survey of the Bank of Japan. Aug. 1946=100)

Year and Month \ Group	Fuels	Building Materials	Metals and Metal Products	Fertilizers	Chemicals	Others	All Commodities
1948 Dec.	407	447	488	378	429	654	501
1949–Jan.	432	449	507	379	381	638	498
Jun.	450	414	434	407	287	625	466
Jul.	439	392	406	380	251	610	443
Aug.	433	357	398	355	246	580	423
Sep.	429	330	407	334	245	536	405
Oct.	429	305	403	296	243	496	385
Nov.	426	286	402	285	231	495	378
Dec.	431	280	413	278	227	486	376
1949 Jan.	439	278	428	274	234	468	375
Feb.	436	270	427	276	226	439	364
Mar.	414	245	419	228	230	390	338
Apr.	395	234	427	190	238	370	327
May	386	237	436	142	245	358	322
Jun.	362	238	457	116	249	367	324
Jul.	351	247	497	112	269	374	337
Aug.	360	262	583	119	284	400	368
Sep.	365	280	658	119	367	412	400

Source: Financial Statistics Monthly.

(9) Manufacturing and Mining Production Indices (1)

(Survey of the Economic Stabilization Board. 1933—'35=100)

	1946	1947	1948	1949	1950 Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.
Over All	31.7	41.6	57.5	75.8	77.7	81.8	85.8	91.7	92.7	98.1	98.7	99.8
Manufacture	28.9	37.2	52.2	71.7	74.1	78.4	85.1	89.5	90.5	96.4	96.8	99.2
Textiles	9.5	15.8	19.2	24.5	26.5	31.4	30.7	33.5	34.7	37.5	38.5	39.6
Chemicals	30.8	39.7	57.6	80.5	85.5	94.5	103.5	112.3	127.4	121.6	120.7	114.5
Iron and Steel	23.1	29.2	51.7	89.3	100.1	104.8	112.0	111.6	115.6	128.7	120.0	123.2
Machinery	62.5	81.4	135.3	150.2	139.2	144.2	164.2	182.3	155.2	176.6	196.1	210.7
Ceramics	19.9	25.8	40.7	73.5	79.3	75.7	89.2	93.4	94.9	94.0	85.5	93.4
Foodstuff Products	31.4	31.6	31.4	43.0	41.6	35.5	35.0	35.3	37.2	41.7	41.0	44.4
Mining	58.6	78.1	100.0	112.0	109.9	112.5	91.8	113.5	112.6	113.8	116.1	105.8

Source: E. S. B., Economics Statistics Express.

Manufacturing and Mining Production Indices (2)

(Survey of the National Economic Research Institute. 1935=100)

	1948	1949	1950 Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.
Over All	59.1	74.0	73.4	76.3	80.1	83.1	86.0	92.0	90.2	94.5	94.4
Manufacture	56.8	71.9	71.3	74.3	79.9	81.5	84.7	91.1	89.0	94.4	93.8
Textiles	18.6	23.1	25.2	30.4	30.3	33.2	34.2	37.3	38.7	39.8	41.1
Chemicals	47.7	66.1	72.2	81.5	90.6	102.1	109.3	111.1	106.7	105.0	117.7
Metal and Metal Products	42.2	78.8	89.7	90.9	102.1	101.1	107.0	119.1	104.9	107.6	114.1
Machinery	111.6	112.8	100.0	97.8	99.7	97.7	93.2	104.0	105.2	119.8	108.2
Ceramics	39.7	68.2	77.2	73.8	87.3	88.6	88.6	85.6	72.2	81.8	97.5
Foodstuff Products	54.1	65.2	65.2	71.1	77.9	74.7	88.2	94.2	104.0	110.4	93.2
Mining	85.5	97.4	96.6	99.0	82.1	100.7	101.4	102.5	104.3	94.9	101.9
Electric Power	141.1	160.8	163.0	155.1	171.8	172.8	179.1	176.1	170.1	165.4	160.8
Gas	91.4	112.2	145.9	132.3	144.0	126.2	121.5	115.7	115.6	105.9	113.9

Source: National Economic Research Institute, Monthly Economic Facts.

(10) Basic Industrial Production

(Survey of Ministry of International Trade and Industry)

	Coal (1,000 Metric tons)	Pig Iron (Blast fec, Electyee) (metric tons)	Ordinary Steel Rolled Products (metric tons)	Special Steel Rolled Products (metric tons)
1947 Total	27,170	246,203	484,629	75,804
1948 Total	33,725	662,629	1,027,369	80,541
1949 Total	37,972	1,493,518	1,967,930	78,686
1950–Jan.	3,107	159,683	200,226	5,068
Feb.	3,186	125,671	220,829	6,173
Mar.	2,577	164,004	255,825	6,086
Apr.	3,224	178,540	232,859	5,914
May	3,227	200,234	243,114	5,328
Jun.	3,254	197,274	294,137	4,765
Jul.	3,304	196,314	233,368	5,791

Source: Ministry of International Trade and Industry, Monthly Bulletin of Statistics.

(11) Export and Import by Countries

(Survey of Ministry of Treasury. In millions of yen)

Countries	Jun. 1950		Jul. 1950		Aug. 1950	
	%	Value	%	Value	%	Value
EXPORT						
Sakhalin, Kurile Is.						
Korea	2.0	476	0.8	186	1.4	379
China	1.5	346	2.5	570	2.1	547
Hongkong	4.3	1,012	5.7	1,297	6.3	1,652
Thailand	2.9	679	3.1	705	4.7	1,240
Singapole	2.4	559	2.7	603	1.3	343
Philippines	1.0	238	1.1	259	0.7	183
Java	0.7	170	1.8	404	3.5	903
Celebes	0.0	9	0.1	25	0.2	54
India	2.9	690	3.8	865	2.6	648
Pakistan	5.2	1,233	7.0	1,588	6.6	1,709
Ceylon	2.7	640	1.6	352	0.3	81
Afghanistan	—	—	—	—	—	—
Iran	0.4	100	0.3	60	0.3	95
Aden	1.3	303	1.1	256	0.9	227
Sweden	0.4	105	1.2	268	0.8	203
U. K.	5.3	1,252	4.2	942	3.0	783
France	0.7	156	0.6	125	1.0	270
Switzerland	0.5	117	0.6	140	0.6	154
Italy	0.8	191	0.6	134	0.9	234
Canada	2.9	679	2.0	449	1.9	498
U. S. A.	20.7	4,899	24.6	5,572	25.7	6,671
Egypt	0.2	46	0.3	59	0.4	116
British West Africa	3.2	753	3.5	795	2.8	726
Belgian Congo	—	—	—	—	—	—
British East Africa	0.8	197	0.8	179	1.6	407
Australia	5.0	1,196	3.6	825	2.3	602
Others	32.3	7,647	26.6	6,028	27.6	7,174
Total	100	23,693	100	22,686	100	25,899
IMPORT						
China	7.6	1,897	10.9	2,447	5.4	1,264
Formosa	0.1	27	0.3	59	3.6	842
Hongkong	0.0	7	0.1	17	0.2	57
Malaya	2.1	520	4.7	1,061	8.0	1,877
Philippines	1.6	412	3.0	669	4.5	1,058
Java	0.6	145	1.0	222	0.8	197
Celebes	0.1	30	0.1	26	0.1	17
India	0.8	197	0.6	131	0.3	80
Pakistan	5.1	1,284	3.4	768	11.9	2,785
Bahren, Is.	0.4	108	0.2	48	—	—
Norway	—	—	—	—	—	—
Sweden	0.6	157	0.7	161	1.2	283
U. K.	0.5	113	0.4	89	0.5	112
Germany	1.6	399	2.4	542	3.1	726
Italy	—	2	—	0	0.1	22
Canada	3.7	931	3.9	874	0.1	21
U. S. A.	48.5	12,169	48.1	10,833	35.0	8,183
Cuba	—	—	—	—	—	—
Brazil	—	—	—	—	—	—
Egypt	0.4	89	0.2	46	1.2	295
Union of S. A.	0.4	104	0.1	22	0.1	13
Australia	4.7	1,186	3.9	871	3.6	820
Others	21.2	5,318	16.1	3,619	20.2	4,738
Total	100	25,094	100	22,505	100	23,363

Source: Oriental Economist Statistics Bulletin.

(12) Export and Import by Articles

(Survey of Ministry of Treasury. In millions of yen)

Articles	Unit	Jun. 1950		Jul. 1950		Aug. 1950	
		Volume	Value	Volume	Value	Volume	Value
EXPORT							
Canned provisions	ton	2,700	682	2,749	833	3,630	1,068
Tea	,,	828	250	629	178	773	187
Cotton yarn	k. g.	982	515	1,323	680	1,028	554
Cotton fabrics	1,000 sq. m	74,798	5,686	76,439	5,723	76,721	6.036
Raw silk	k. g.	306,085	650	342,414	712	548,273	1.149
Silk fabrics	1,000 sq. m	2,657	418	3,103	489	8,498	1,214
Rayon Filament & Staple yarn	k. g.	475,946	86	484,411	139	425,050	159
Staple fibre fabrics	1,000 sq. m	11,944	1,168	10,361	976	14,899	1,477
Woolen fabrics	1,000 ,,	517	254	131	78	266	165
Shirtings & shirts	100 pcs	15,431	122	18,385	150	14,802	113
China ware	ton	—	647	—	566	—	721
Sheet glass & glass ware	,,	—	205	—	222	—	238
Cement	,,	44,862	202	44,077	191	36,709	162
Coal	,,	48,796	176	14,382	50	18,469	61
Steel materials	,,	55,870	1,930	54,783	1,958	58,909	2,147
Enamelled iron ware	,,	—	—	—	—	—	—
Rolling stock & parts	,,	—	70	—	222	—	502
Spinning machine & parts	,,	1,821	515	1,587	422	905	258
Toys	,,	1,214	313	1,304	351	1,441	391
Total (Incl. others)			23,693		22.686		25,899
IMPORT							
Rice	ton	73,205	3,329	42,893	1.884	44,303	1,916
Barley	,,	0	38	—	—	9,755	206
Wheat	,,	105,144	3,587	96,820	3.278	67,143	2,229
Corn	,,	—	—	—	—	—	—
Wheat flour	,,	—	—	—	—	—	—
Beans & peas	,,	63,482	2,799	39,033	1.806	5,500	240
Sugar	,,	—	—	10	0	17,420	822
Salt	,,	6,064	15	8,478	38	7,296	22
Pulp	,,	1,362	79	2,924	170	1,254	78
Raw cotton	,,	27,570	7,069	23,412	6,385	26,137	7,763
Wool	,,	2,312	1,284	1,205	718	1,639	1,089
Lumber	,,	—	247	—	229	—	298
Rubber goods	,,	4,353	679	7,418	1.142	10,589	2,192
Mineral oil	,,	101,911	530	331,599	1,000	195,437	1,247
Coal	,,	48,732	206	99,223	417	95,810	412
Metal ores	,,	88,931	352	105,074	371	168,930	602
Iron & steel	,,	—	—	—	—	—	—
Total (Incl. others)			25.094		22.505		23,363

Source: Oriental Economist Statistics Bulletin.

25X1

Next 114 Page(s) In Document Exempt