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phenol-formaldehyde resin. At the polymerization temperature of

bium carbide heaters and other furnace

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ASSOCIATION: Giredmet, Moscow

SUBMITTED: 10Dec63 ENCL: 00 SUB CODE: IE

NO REF SOV: 006 OTHER: 001 ATD PRESS: 4001

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

BERLIN, I. S.

G. N. Maslyanskiy and I. S. BERLIN, Catalytic Div., Cen. Sci. Res Inst of Aviation Fuels & Oils (Moscow) Co-authored "Conversion of Hydrocarbons on Alumosilicate Catalyzers."

SO: Zh Obsh Khim - XVI, 10, 1946, p 1642

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

BERLIN, I.Z.

BERLIN, I.Z.; MAKSIMOV, I.M., redaktor.

[Fire prevention in warehouses of metallurgical plants] Protivopozharnye meropriiatiia v skladskom khoziaistve predpriiatii metallurgicheskoi promyshlennosti. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1953. 191 p. (MLRA 7:8)
(Metallurgical plants--Fires and fire prevention)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

BARDYSHEV, G.M.; BERLIN, I.Z.; VAYNSHTOK, M.Z.; LEVIN, S.I.; PAVLOV, V.N.; PUSHKANTSEV, B.N.; SAMOCHETOV, V.F.; SEMENOV, M.G.; SOKOLOV, A.Ya.; KHUVES, E.S., inzh.; EMMANUEL', T.P.; GRIGOR'YEV, K.P., inzh., red. [deceased]; DENISENKOVA, L.M., red.; D'YACHENKO, V.M., red.; SAVEL'YEV, Z.A., tekhn. red.

[Technical handbook for workers in the grain-elevator industry] Tekhnicheskii spravochnik rabotnika elevatornoi promyshlennosti. Pod obshchei red. Grigor'eva K.P. i Khuvesa E.S. Moskva, Izd-vo tekhn. i ekon. lit-ry po voprosam khleboproduktov. Pt.1. 1960. 339 p. (MIRA 14:11)
(Grain elevators)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

AVERBUKH, Vladimir Leonidovich; BERLIN, Isay Zakharovich; VOLKOV, P.N., red.; SOVEL'YEVA, Z.A., tekhn. red.

[How to protect cereal products against radioactive, chemical substances, and bacterial agents] Kak zashchitit' khleboprodukty ot radioaktivnykh, khimicheskikh veshchestv i bakterial'nykh sredstv. Moskva, TsINTI, 1963. 44 p. (MIRA 16:12)

(Cereal products)
(Radioactivity—Safety measures)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

PERTSOVSKIY, Ye.S.; BERLIN, I.Z.; RODNEVICH, B.N.; FREYMAN, I.R.; LETNEV, B.Ya., red.

[Protection of cereal products from weapons of mass destruction] Zashchita khleboproduktov ot oruzhia massovogo porazheniia. Moskva, Kolos, 1964. 133 p. (MIRA 18:3)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

S/194/62/000/006/023/232
D413/D308

AUTHORS: Berlin, K., and Vels, Zh.

TITLE: The application of modern electronic computers, with programming theory, in analyzing the economics of petroleum processing (Summary)

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 6, 1962, abstract 6-1-134 m (V sb. 5-y Mezhdunar. neft. kongress, 1959, T.Z., M., Gostoptekh-izdat, 1961, 212-213)

TEXT: An analog computer is used to determine optimum conditions for the processing of petroleum. Programs have been worked out that are capable of allowing for all possible compositions of the raw material and finished products and for the technical equipment of the plant. The paper gives details of the program, the forms of working tables, and practical problems in the simulation of individual installations and of the plant as a whole. [Abstracter's note: Complete translation.]

Card 1/1

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"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

BERLIN, L.R.

Reparative regeneration of the epidermis in reptiles. Doklady Akad. nauk 86 no. 4:829-832 1 Oct 1952. (CLML 23:3)

1. Presented by Academician N. N. Anichkov 25 July 1952.
2. Military Medical Academy imeni S. M. Kirov.

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

BERLIN, L.B.

USSR/ Medicine - Histology

Card 1/1 Pub. 22 - 43/52

Authors : Berlin, L. B.

Title : Histological changes in the epidermis of a frog during reparative regeneration

Periodical : Dok. AN SSSR 100/2, 361-364, Jan 11, 1955

Abstract : Experiments were conducted on adult frogs (Rana temporaria L.) to determine the histological changes in damaged epidermis during the process of reparative regeneration. The results of the healing process are described. Twelve references: 11 USSR and 1 German (1930-1952). Illustrations.

Institution : The S. M. Kirov Military-Medical Academy

Presented by : Academician N. N. Anichkov, September 23, 1954

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

BERLIN, L. B.

USSR/ Medicine - Histology

Card 1/1 Pub. 22 - 41/46

Authors : Berlin, L. B., and Shalumovich, V. N.

Title : Study of the skin of a frog and especially its glands by means of luminescent and ultraviolet microscopy and certain histochemical methods

Periodical : Dok. AN SSSR 103/1, 153-155, Jul 1, 1955

Abstract : The characteristics of frog skin and especially the characteristics of its glands were investigated by means of luminescent and ultraviolet microscopy and by some other histochemical methods. Results are described. Seven references: 4 USSR, 2 Berm. and 1 Scand. (18[illegible] and [illegible]). Illustrations.

Institution : Military-Medical Academy im. S. M. Kirov

Presented by: Academician Ye. N. Pavlovskiy, March 5, 1955

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

BERLIN, L.B., SHALUMOVICH, V.N.

Luminescent and ultraviolet microscopy in the histological study of the skin and its glands in the axoletl. Dokl. AN SSSR 105 no.4:824-827 D '55. (MLRA 9:3)

1. Voyenno-meditsinskaya akademiya imeni S.M. Kirova. Predstavlena akademikom Ye.N. Pavlovskim.
(Axoletls) (Skin)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

KHLOPIN, N.G.,; SHEVCHENKO, N.A.,; BERLIN, L.B.

Histological changes in the skin following injury in rabbit; preliminary report. Biul. eksp. biol. i med. 41 no.2:61-64 F '56. (MLRA 9:6)

1. Iz Voyenno-meditsinskoy ordena Lenina akademii imeni S.M. Kirova.
(SKIN, pathology,
histol. changes in lesions induced by subcutaneous inject. in rabbits (Rus))

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

Berlin, L.B.

Histological study of epidermis of lamprey by methods of luminescent, ultraviolet, and dark field microscopy. [illegible] B. Berlin and V. N. Shalumovich (S. M. Kirov Mil. Med. Acad. Moscow). *Doklady* [illegible] 107 [illegible] 1956. Vital [illegible] structure of epidermis of *Lampetra fluviatilis* [illegible] after fixation with formalin. In the cells of the outermost sheath the basophilic cytoplasm absorbs strongly at 256–80 mμ. The bulb-formed cells in the deeper epidermis show intense absorption at 256–80 mμ in the nuclei and cytoplasmic threads. Intense absorption in this region is found in cytoplasm and nuclei of the granular cells. The secretion of the mucous cells does not absorb in ultraviolet and has a brown luminescence. The granular cells produce a lipoid secretion, while the mucous cells produce a mucous secretion which is unlike that produced by fish, in general, and amphibia.

G. M. Kosolapoff

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

USSR / Human and Animal Morphology (Normal and Pathological). Blood-Vascular System. Vessels. S-5

Abs Jour: Ref Zhur-Biol., No 17, 1958, 79157.

Author : Berlin, L. B.
Inst : Not given.
Title : Changes of the Endothelium of the Skin Vessels Under the Influence of Nourishment of Pastoral (Ixodoidea) Ticks.

Orig Pub: Dokl. AN SSSR, 1958, 109, No 4, 859-861.

Abstract: Tests were carried out on rabbits (16) and guinea pigs (15), in the skin of which up to 100 Hyaloma asiaticum ticks were planted. The skin together with the ticks was fixed after different periods (1-60 days). Histological study showed that the changes in the vessels begin with the endothelium and were observed not only

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"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

USSR / Human and Animal Morphology (Normal and Pathological). Blood-Vascular System. Vessels. S-5

Abs Jour: Ref Zhur-Biol., No 17, 1958, 79157.

Abstract: in the veins but also in other vessels. They are characterized by proliferation and thickening of the endothelium, by its growth into the lumen of the vessel and into the inside of the wall, and by the appearance of thrombi in the lymph and venal vessels. Changes in the skin vessels caused by the mechanical damage and toxic action of the ticks were preserved for 3-4 weeks.

Card 2/2

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"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

BERLIN, L.B.

Changes in the striated muscular fibers of the skin in Hyalomma asiaticum P.Sch.et E.Schl.(Ixodiadae) due to variatins in feeding. Dokl.AN SSSR 111 no.6:1348-1351 D '56. (MLRA 10:3)

1. Voyenno-meditsinskaya akademiya imeni S.M. Kirova. Predstavleno akademikom Ye.N. Pavlovskim.
(TICKS)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

BERLIN, L.B.

BERLIN, L.B. (Leningrad, P-10, Primorskiy pr., d.39, kv.3); SHALUMOVICH, V.N. (Leningrad, K-44, pr. Karla Marksa, d.56, kv.50)

Study of the glandular components of the skin in lower vertebrates using luminescence, ultraviolet, and anoptral microscopy and some histochemical methods [with summary in English]. Arkh.anat.gist. i embr. 34 no.4:46-53 Jl-Ag '57. (MIRA 10:11)

1. Iz kafedry gistologii s embriologiey (nach. - deystvitel'nyy chlen AMN SSSR prof. N.G.Khlopin) Voyenno-meditsinskoy ordena Lenina akademii im. S.M.Kirova.

(SKIN, anatomy and histology,
glandular components in lower vertebrates (Rus))

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"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

USSR / Human and Animal Morphology, N rmal and Pathological. S-6
Cutaneous Integument.

Abs Jour : Ref Zhur - Biol., No 16, 1958, No 83772

Author : Berlin, L. B.
Inst : AS USSR
Title : Histological Changes in the Skin of Rabbits and Guinea pigs Provoked by the Feeding upon them of Ticks Hyalomma Asiaticum P. Sch. et E. Schl. (of the Ixodidae family).

Orig Pub : Dokl. AN SSSR, 1957, 112, No 2, 340-343

Abstract : 12 rabbits and 13 guinea pigs were subjected to experiments . The feeding of the ticks was carried out by the tube-gluing method with the subsequent histological study of skin sectors in varying periods. Upon a bite by a tick, dystrophic and necrobiotic processes spread deeply into the dense part of the skin. Layers of dead epithelium and connective tissue form around the oral parts. Because of the change in the

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"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

20-4-52/61

AUTHOR BERLIN L.B.

TITLE The histological structure of transplants of human skin, obtained with the aid of a dermatome.
(Gistologicheskoye stroyeniye transplantatov kozhi cheloveka, poluchennykh s pomoshch'yu dermatoma.- Russian)

PERIODICAL Doklady Akademii Nauk SSSR 1957, Vol 113, Nr 4, pp 909-912 (U.S.S.R.)
Received: 6/1957 Reviewed: 7/1957

ABSTRACT In recent years free transplantation of larger pieces of human skin debris obteined with the aid of a dermatome has more and more been used in plastic surgery. The method is recommended in the case of injuries covering large surfaces, especially for the curing of burns. There is, however, in not the slightest indication surgical publications as to the histological structure of these skin debris, or on the components getting into the transplant when it is cut off. According to individual indications large surfaces of viable epidermic cells must remain with the skin donor. As material 15 main transplants from the front thigh surface, more rarely from the hind parts of the body served. The knife of the dermatom was adjusted to a cutting thickness of 0,3 - 0,5 mm. The thickness in preparations turned out to be 120-150 μ up to 600-700 on the avarage 350 - 500 μ. The epidermis was

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The histological structure of transplants of human skin, obtained with the aid of a dermatome.

completely included, further the mammulae layer below it and partly also the omentum layer. The epidermis has a thickness of at least 50 μ and of 200 μ at the most, but mostly of 70 - 100 μ. It consists of three layers: the germinal-, granulen- and corny layer. Its histological and zytological structures are explicitly described and illustrated. The boundary between epidermis and derma is undulated and in some parts almost even. Elastic fibres extend from the mammulae layer of the derma toward the basal membrane, which disappears in the membrane. The fibrous part of transplants has a maximum thickness of 680 and a minimum thickness of 60 μ, mostly, however, of 200-400 μ, thickness of the transplant is, in principle, determined by the level of the cutting off of the derma. Here too the finer structure is more explicitly described. The surface of the transplant, which later has to contact with the recipient surface appears to be not seriously injured when cut off and apparently contains many viable cells. in the fibrous part a close not of blood vessels develops. In it numerous capillaries are created which invade the mammulae. Lymphitic vessels could not be identified by the author. Nerve fibres were not too rarely seen. The following

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The histological structure of transplants of human skin, obtained with the aid of a dermatome.

pieces of skin were in a transplant of 0,3 - 0,5 mm thickness: Surface parts of hair, orifices of perspiration glands, sometimes the more superficial parts of sebaceous glands, rarely the complete hair follicles or sebaceous glands themselves. From a histological and not less from a practical point of view epithelisation of the donory is of interest. The parts remaining here con be judged from the composition of the transplant. The viable cells of the pieces of skin apparently form the only source of epithelisation of the donor. This is confirmed by some indications, though not numerous, concerning the considerable proliferative possibilities of viable epithelial elements of skin appendices in the case of mammals and human beings. Complete epithelisation sets in after 3-4 weeks according to the thickness of the layer of skin cut off. No data on the histology of these processes are given. It would be interesting to bring light also into those processes

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"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

20-4-52/61

The histological structure of transplants of human skin, obtained with the aid of a dermatome.

which take place during the healing or non-healing process between the transplant and the recipient rast.
(14 citations from Slavic publications, 3 Illustrations, 1 Table.)

ASSOCIATION: Military Medical Academy "M.V. Kirov".
PRESENTED BY: E.N. PAVLOVSKIY, Member of the Academy.
SUBMITTED: 29.12. 1956.
AVAILABLE: Library of Congress.

CARD 4/4

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

BERLIN, L. B.

AUTHOR: Berlin, L. B. 20-4-47/60

TITLE: Histological Processes that Take Place in the Course of the Healing of Closed up Operational Wounds in Dogs and Cats (Gistologicheskiye protsessy pri zazhivlenii zashitykh operatsionnykh ran u sobak i koshek).

PERIODICAL: Doklady AN SSSR, 1957, Vol. 115, Nr 4, pp. 799-802 (USSR.).

ABSTRACT: A series of works (old and new) is dedicated to the wound healing of dogs, The present work aims at filling the gap that remained due to negligence of the histological phanges and correlations of the skim tissue components by former authors. A closed up operational wound cannot lack specific since it heals due to primary tension. Moreover the study of the epidermal tissue of various vertebrate animals shall be continued. Pieces of skin of dogs and cats cut out from the domain of operation wounds and sewn aseptically into the animals served as material: In the case of the dogs they were sewn in at the ventral side of the neck and at the inner part of the femur; in the case of the dogs at the abdomen. Moreover the method of fixation, colouring, and the structure of the epidermis with normal animals is described. The regeneration processes, as they can be observed in the histological structure of the tissue around

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"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

Histological Processes that Take Place in the Course of the Healing of Closed up Operational Wounds in Dogs and Cats. 20-4-47/60

the wound are described in detail in the single stages of healing. At those part of the wound where the margins diverged considerably, the epidermal regenerate entered deeply into the gap-like cavity and gradually lined its margins. Single wound sections were epithelized after different periods of time, in the case of cats somewhat faster than with dogs. However, also in the case of the dogs epithelization was completed after 9 days. The epidermis surrounding the wound remains for a long time bulbous until the complete epithelization. The data of Kedrovskiy on the accumulation of ribonucleinate in the cytoplasm of the cells on the occasion of regeneration are here confirmed. It is striking that the nucleoli even after the processing with ribonucleasis remain basophile and can be coloured intensively with azure (fig. 4). Apparently they also contain desoxyribonucleine acid (thymonucleine acid). No hairs and glands are present in the healing torus. Inspite of considerable similarity between the histological processes in the course of the healing of closed up wounds with dogs and cats the following differences could be observed: cats: accelerated epithelization, greater rôle of the epithelial elements of the hair sheath on the occasion of the formation of the "repair" layer in the zone of the contraction of the skin

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"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

Histological Processes that Take Place in the Course of the Healing of Closed up Operational Wounds in Dogs and Cats. 20-4-47/60

by the suture, as well as in the regenerate itself, especially strong dilation of the lymphatic vessels lined by cubiform endothelium. There are 3 figures, and 2 Slavic references.

ASSOCIATION: Academy for Military Medicine im.S.M.Kirov (Voyenno-meditsinskaya akademiya imeni S. M. Kirova).

PRESENTED: By I. I. Shmal'gauzen, Academician, May 10, 1957

SUBMITTED: May 5, 1957.

AVAILABLE: Library of Congress.

Card 3/3

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

AUTHOR: Berlin, L. B. SOV/20-122-2-38/42

TITLE: Histological Modifications Occurring in the Human Epidermis Subjected to Autoplasty (Gistologicheskiye izmeneniya epidermisa cheloveka pri autoplastike)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 122, Nr 2, pp 300-303 (USSR)

ABSTRACT: The transplantation of great flaps of skin which are detached by the dermatom is more and more established in surgery practice, in particular in the treatment of large burns (Refs 1 - 6). Little effort has hitherto been made to investigate the skin modifications in question as well as the transplantates (Refs 7 - 10). The author tried to clarify the morphological peculiarities of human skin tissue, primarily of the epidermis, under conditions of transplantation and regeneration. This was to be compared with similar processes in various vertebrates (Refs 11 - 18). Parts of skin, 2 × 0,5 × × 0,5 cm in size were studied. They contained the edge of the transplantate and the bordering margin of the burn. (B. S. Vikhriyev, I. I. Glumov, N. V. Gudin-Levkovich and A. N. Orlov assisted in furnishing samples). The individual

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SOV/20-122-2-39/42

Histological Modifications Occurring in the Human Epidermis Subjected to Autoplasty

stages developing in the days after the operation are described (Figs 1 - 4). The transplanted skin does not regain the appearance of a normal skin even after from 5 to 10 days after operation. Neither its appendages were restored nor appeared the normal undulating course of the boundary between the epithelium and the connective tissue and the characteristic sub-division of the derma in layers. The epidermis, however, becomes similar to the epithelium of undamaged skin across the whole transplantation section investigated. Perforations are very important in a successful healing on of skin flaps. In these places already in the first week after autoplasty the most active proliferation processes proceed. The epithelium on the contrary is destroyed for a great part between the perforations. The closest contact between the underlying tissue and the growing epithelial layer is established primarily at the perforations. The metabolism of the transplanted skin is disturbed for a longer period. This is shown, among other circumstances, also by a similarity found between the epithelium in the transplantate with the epidermis the innervation of which was interrupted. There are 4 figures and 26 references, 21 of which are Soviet.

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"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

SOV/20-122-2-38/42

Histological Modifications Occurring in the Human Epidermis Subjected to Autoplasty

ASSOCIATION: Voyenno-meditsinskaya akademiya im. S. M. Kirova (Military-Medical Academy imeni S. M. Kirov)

PRESENTED: April 28, 1958, by I. I. Shmal'gauzen, Member, Academy of Sciences, USSR

SUBMITTED: April 27, 1958

Card 3/3

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

17(1)

AUTHOR: Berlin, L. B. SOV/20-123-1-48/56

TITLE: A Histochemical Investigation of Glycogen in Human Skin in the Process of Regeneration and Autotransplantation (Gistokhimicheskoye izucheniye glikogena v kozhe cheloveka pri regeneratsii i autotransplantatsii)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 1, pp 179 - 181 (USSR)

ABSTRACT: Data to be found in the literature, concerning the changes of carbohydrates in the skin in wound healing, transplanting and other proliferative processes are very fragmentary (Refs 1, 2). It is impossible to get a somewhat complete idea of glycogen localization from these data, let alone the determination of other carbohydrates. Very recent data suggest (Refs 3, 4) that there is also in human epidermis a systematic change of glycogen in autotransplantation and regeneration that can be demonstrated. Pieces of human skin served as test material, which were cut off by means of a dermatome (Ref 6) and which were destined for autoplastic grafting after large burns of the 3rd degree. Small pieces of skin were removed 6 - 70 days after grafting by means of biopsy

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"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

A Histochemical Investigation of Glycogen in Human Skin in the Process of Regeneration and Autotransplantation

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(Biopsiya) or autopsy. Skin pieces from 37 patients were tested, which included both pieces of the auto-graft as well as of the surrounding regenerating skin at the edges of the burns. They had been perforated before transplanting by which a number of small wounds were created in the graft and consequently also numerous foci of regeneration. Thus it was possible to study glycogen histochemically not only in the graft, but also in the regenerating skin. The pieces of skin which had been cut off by a dermatome did not show any content of glycogen in the epidermis and the epithelial portions. In the proliferating epithelium, under conditions both of regeneration and of transplantation, a considerable quantity of systematically localized glycogen inclusions can be found. The author describes the epidermal product of regeneration and the skin graft in detail (Figs 1 - 3). The observations made in the histochemical glycogen changes during regeneration an autotransplantation of human skin showed that, under conditions of proliferation of the epidermis and consequently of a higher metabolism, an increased consumption

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"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

A Histochemical Investigation of Glycogen in Human Skin in the Process of Regeneration and Autotransplantation

SOV/20-123-1-48/56

of glycogen, as could be expected, occurs by way of glycogenolysis (Ref 4). Glycogen resynthesis, however, proved to be excessive. It can, therefore, be found in large quantities in the epidermis and in smaller quantities also in the connective tissue. As the intensity of the exchange process in the skin decreases in later stages of regeneration and in the grafts, the glycogen consumption will probably be reduced. The shortage of glycogen in preparations of normal skin and in later stages of transplantation (Ref 2) or at the beginning of regeneration suggests that glycogen resynthesis takes place less intensively in such cases and only covers consumption. There are 3 figures and 20 references, 18 of which are Soviet.

ASSOCIATION: Voyenno-meditsinskaya akademiya im. S. M. Kirova (Academy of Military Medicine imeni S. M. Kirov)

PRESENTED: June 30, 1958, by N. N. Anichkov, Academician

Card 3/4

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

BERLIN, L.B. (Leningrad, P-10, Primorskiy prosp., d.39, kv.3)

Autotransplantation of skin in man; histological and luminescence-microscopic investigations. Arkh.anat.gist.i embr. 37 no.8: 47-55 Ag '59. (MIRA 12:11)

1. Kafedra gistologii s embriologiyey (nach. - chlen-korrespondent AMN SSSR prof.S.I.Shchelkunov) i kafedra gospital'noy khirurgii (nach. - prof.I.S.Kolesnikov) Voyenno-meditsinskoy ordena Lenina akademii im. S.K.Kirova.

(SKIN TRANSPLANTATION)

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"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

17(1)

AUTHOR: Berlin, L. B.

SOV/20-127-4-48/60

TITLE: Histological Changes of the Epidermis of a Sucking Pig After Extensive Burns of the III Degree

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 4, pp 896-899 (USSR)

ABSTRACT: The data published on the healing of the burns mentioned in the title are fragmentary. The present investigation may contribute to the solution of several practical problems because of the similarity of the clinical picture to that of burns of human beings. It is important to compare the results obtained with those obtained with man and experimental animals (including the healing of mechanical injuries (Refs 1-9)). This comparison is supposed to show the characteristics of the epidermis of the sucking pig. Small pieces of skin (2.5 × 0.5 × 0.5 cm) from the periphery of the burn were used. The burns were caused by lighting a piece of cotton fabric saturated with gasoline on the skin of one side of the body (V.M. Burmistrov, V. G. Slinko, Mrs. R. A. Strugach, and K. I. Shumikhina participated). Then the singed skin was infected by a meat gravy culture of Streptococcus hemolyticus,

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strain 434, and by a 24-hour-old agar culture of Staphylococcus aureus, strain 209. The material was taken out during the biopsy or, more rarely, during an autopsy after 0 hours to 53 days. The epidermis shows considerable changes after the burning. Over a considerable area it is detached from the derm but the basal membrane remains attached to the connective tissue. A detailed description of the changes in the course of the healing (Figs 1-4) follows. Upon comparison of the above changes of epidermis of the sucking pig with the reparative regeneration of epidermis in the case of mechanical injuries of experimental animals (Refs 5,7,8,11,12) and human beings (Refs 6,13) certain peculiarities appear in addition to a certain similarity. They depend mainly on the extension of the injury, the different intensity in the peripheral and central parts of the burn, the long-lasting presence of the necrotic tissue, and probably, the infection of the wound. These peculiarities cause the dominating role of the epithelium of the skin appendices and the formation of a new epidermal envelope. This leads to the formation of regeneration products at several places; initially, the epithelization

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Histological Changes of the Epidermis of a Sucking Pig After Extensive Burns of the III Degree SOV/20-127-4-48/60

of the wavy surface of the former derm leads to a "melting away" of the epithelium between the papillae; a uniform epithelial layer is formed later; the epithelium of the regeneration product forms thick exuberances. The latter, however, proves unable to epithelize the whole wound even over a long period of time. This is caused by the pronounced processes of scar formation in the central parts of the wound where the burns were especially deep. There are 4 figures and 14 references, 10 of which are Soviet.

ASSOCIATION: Voyenno-meditsinskaya akademiya im. S. M. Kirova (Military-medical Academy imeni S. M. Kirov)

PRESENTED: April 16, 1959, by N. N. Anichkov, Academician

SUBMITTED: April 14, 1959

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APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

17(4)

AUTHOR: Berlin, L. B. SOV/20-128-3-50/58

TITLE: Histological Changes in the Skin of a Sucking Pig in Autoplasty

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 3, pp 614-617 (USSR)

ABSTRACT: In healing burnings of 3rd degree (Refs 1-5), autoplastic transplantations of large skin flaps have recently been used with success since the healing of large burnings without a surgical operation is much retarded (Ref 4). The author studied the changes of autotransplants and the surrounding skin in a sucking pig, the skin of which is much more similar to human skin than that of other experimental animals. The pictures obtained were to be compared with the results obtained with another material (Refs 6, 8-19). Histological changes in the sucking pig have been insufficiently investigated (Refs 6, 7), while no histochemical data could be found in available publications. The material was supplied by V. M. Burmistrov and V. G. Slinko. It consisted of skin pieces 2 × 0.5 × 0.5 cm large, which comprised the marginal area of the transplant and the adjoining border of the burn. The burn was made with an open flame 4 days before the transplantation, and included 10-13% of the body

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surface. A biopsy was carried out on the 1st - 39th days after transplantation. The burn was infiltrated - immediately after burning - with 24-hour old meat-broth cultures of Streptococcus haemolyticus, stem 434, and Staphylococcus aureus, stem 209 (2-billion suspension, 5 ml). The author describes in detail the changes of the skin flap cut off by means of a dermatome, perforated and autotransplanted after 5 days. Before the burning and before the operation, the animals got an injection of 10% thiopental solution (0.5 ml per 1 kg live weight). Figures 1-3 show photographs of preparations 9-14 days after the operation, near and far from perforations. The author concludes from his results that in the above-mentioned skin autoplasties of infected burnings of 3rd degree no recovery of the skin as an organ takes place, even at the latest of the observed points of time. This is proved by the complete absence of hair and glands on the healed transplant, as well as of the usual wavy course of the

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Histological Changes in the Skin of a Sucking Pig in Autoplasty SOV/20-128-3-50/58

border between epithelium and the underlying connective tissue. Neither is the derma, as usual, differentiated into a cone- and a reticular layer. There are 3 figures and 24 references, 16 of which are Soviet.

ASSOCIATION: Voyenno-meditsinskaya akademiya im. S. M. Kirova (Military Medical Academy imeni S. M. Kirov)

PRESENTED: June 9, 1959, by N. N. Anichkov, Academician

SUBMITTED: June 3, 1959

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APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

BERLIN, L.B.

Healing of skin autotransplants in man. Vest.Khir. 84 no.6:44-48 Je '60. (MIRA 13:12)

(SKIN GRAFTING)

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"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

BERLIN, L.B.

Histological changes in the skin of baby pigs following homotransplantation after burns. Dokl. AN SSSR 134 no.5:1252-1255 O '60. (MIRA 13:10)

1. Voyenno-meditsinskaya akademiya im. S.M.Kirova. Predstavleno akademikom N.N.Anichkovym.
(Skin grafting) (Homografts)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

BERLIN, L.B.; NEZDATNYY, M.M.

Histological processes during homografts of preserved rabbit skin. Dokl.AN SSSR 138 no.3:706-709 My '61. (MIRA 14:5)

1. Voyenno-meditsinskaya akademiya im. S.M.Kirova. Predstavleno akademikom N.N.Anichkovym.
(HOMOGRAFTS) (SKIN GRAFTING)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

BERLIN, L.B. (Leningrad, P-10, Primorskiy pr., 39, kv.3)

Histological changes in the epidermis after extensive burns in acute radiation sickness. Arkh. anat., gist. i embr. 42 no.4:53-58 Ap '62. (MIRA 15:6)

1. Voyenno-meditsinskaya ordena Lenina akademiya imeni S.M. Kirova (nauchnyy rukovoditel' - I.A. Chalisov).
(RADIATION SICKNESS) (EPIDERMIS)
(BURNS AND SCALDS)

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"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

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S/020/62/143/001/029/030
B144/B101

27.1220

AUTHOR: Berlin, L. B.

TITLE: Effect of small doses of ionizing radiations and cystamine on the mitotic activity of the epithelia of cornea and duodenal crypts

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 143, no. 1, 1962, 218-220

TEXT: Effects of cystamine and small radiation doses were studied in three test series of white rats by comparing the number of mitotic cells in the epithelia of the cornea (EC) and the duodenal crypts (EDC). (1) Intraperitoneal administration of 60 mg/kg cystamine produced a drop to 24 ± 2.0 after 1 hr, then an increase to normal values lasting for 20 hrs, followed by a sharp rise to 149 ± 13.1 to 189 ± 23.9 lasting for the remaining 6 days of observation. (2) 5 hrs irradiation with Co^{60}, 0.21 r/min, led in EC to reduction of mitosis from 150 ± 13.0 to 107 ± 6.5 after 1 hr, followed by a rise to about 210 after 3 hrs, a second drop to 95 ± 17.2 after 8 hrs and a sharp rise (289 ± 31.5) after 20 hrs lasting for some days. (3) Administration of cystamine before irradiation resulted

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S/020/62/146/001/016/016
B144/B101

AUTHORS: Berlin, L. B., Zhupan, V. F.

TITLE: Histological changes in skin grafts on burns in irradiated rabbits

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 146, no. 1, 1962, 242 - 245

TEXT: The effect of daily intramuscular cortisone doses of 1.0 mg/kg upon homografts was studied in 60 rabbits irradiated with a single dose of 600 r, burned on the same day with water at 83°C on the inner surface of the ear, and subjected to a general treatment of their radiation disease. The healing process was observed up to 47 days after homografting in different stages of acute radiation disease: 1) latent stage; 2) peak; 3) recovery; 1) The graft was viable throughout the 30 days of observation and finally showed multiple strands of connective tissue and endothelial proliferations. 2) The epidermis perished, the connective tissue remained viable throughout the 45 days of observation. The inflammation spreaded to the cartilage, where destructive as well as proliferative processes were observed. In the final period, either marginal necroses were found under which the

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recipient epithelium had grown, or the recipient epithelium had grown continuously into the epidermis of the homograft. 3) Protracted inflammation owing to trauma, decaying tissue, and secondary infection. Part of the cartilage was necrotic, but other parts showed growth by apposition or intercalar growth. Throughout the 47 days of observation the flap was viable. No distinct boundary was observed between the bottom layers of the flap and the cicatricial granulation tissue of the recipient. In previous studies (DAN, 138, no. 3, 706 (1961)) without administration of cortisone the grafts had perished after 12 - 15 days. There are 2 figures.

ASSOCIATION: Voyenno-meditsinskaya akademiya im. S. M. Kirova (Military Medical Academy imeni S. M. Kirov)

PRESENTED: March 15, 1962, by N. N. Anichkov, Academician

SUBMITTED: March 12, 1962

Card 2/2

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

BERLIN, L.B.; KAMENSKAYA, N.L.

Histologic changes in chicken epidermis in reparative regeneration. Dokl. AN SSSR 149 no.2:428-430 Mr '63. (MIRA 16:3)

1. Voyenno-meditsinskaya akademiya im. S.M.Kirova. Predstavleno akademikom N.N.Anichkovym.
(Epidermis) (Regeneration (Biology))

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

BERLIN, L.B., dotsent

Histological changes in the human skin after thermal burns. Vest. derm. i ven. 37 no.1:10-15 Ja'63. (MIRA 16:10)

1. Iz Voyenno-meditsinskoy ordena Lenina akademii imeni S.M.Kirova.

(BURNS AND SCALDS)

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"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

BERLIN, L.B.; PEREGUDOV, I.G.

Some histological changes in the skin during homoplasty and cortisone therapy in healthy and irradiated rabbits. Biul. eksp. biol. i med. 55 no.2:116-120 F'63. (MIRA 16:6)

1. Iz kafedry obshchey khirurgii (nachal'nik - prof. V.I. Popov) Voyenno-meditsinskoy ordena Lenina akademii imeni S.M.Kirova. Predstavlena deystvitel'nym chlenom AMN SSSR I.P.Pavlovym.
(RADIATION—PHYSIOLOGICAL EFFECT) (HOMOGRAFTS)
(CORTISONE)

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L 18965-63 EWT(1)/EWT(m)/BDS/ES(j) AMD/AFFTC/ASD AR/K

ACCESSION NR: AP3006602 S/0020/63/151/006/1450/1452

58
57

AUTHORS: Chalisov, I. A.; Berlin, L. B.

TITLE: Regenerative processes in the mucous membrane of the duodenum after radiation damage 19

SOURCE: AN SSSR. Doklady*, v. 151, no. 6, 1963, 1450-1452

TOPIC TAGS: radiation damage, radiation sickness, radioactive cobalt, tissue regeneration, organ regeneration, duodenum, intestinal mucosa

ABSTRACT: Changes in the duodenal mucosa of 111 white rats were studied immediately after exposure to systemic Co sup 60 irradiation (900 r in 3 hours) and 15 days later. Hematologic studies were performed to assess the degree of radiation damage. Stained sections of duodenal mucosa obtained on the day after irradiation were normal in appearance, but mitotic activity was markedly depressed (mitotic index 0.05%, as compared to the normal 5.4%). There was a concomitant 50% decrease in the member of leukocytes in the peripheral blood and of nucleated cells in the bone marrow. The mitotic index rose after the first few days, but only to 1%, and the peripheral leukocytes and medullary nucleated cells were still

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1/6 to 1/8 the normal numbers. The cytoplasm of the cells of the epithelium of the crypt and their luminia contained pyronine-staining, Feulgen-positive granules derived from cell disintegration. Destructive processes were conspicuous from the second day on, with resultant loss of the entire epithelial lining of the duodenum, an inflammatory process in the corresponding mucous membrane, marked leukopenia and total destruction of the mucosa, with temporary disappearance of the villi. Regeneration began on the third day: the ribonucleprotein content increased and crypt cell mitotic activity rose from 2 to 5.7% within this 24-hour period. Foci of regeneration appeared and ultimately fused to re-line the mucosa with epithelium, and villi--at first shorter and broader than normal--began to re-appear. By day 7-10, the crypts and villi were normal in appearance and structure. The period of intensive regeneration coincided with the onset of the most severe phase of acute radiation sickness, marked by hemorrhaging, maximal depression of hematopoiesis, and the death of 50% of the rats on days 11-14. Thus successful tissue, and even organ, regeneration may take place despite severe radiation damage. Orig. art. has: 4 figures.

ASSN: Academy of Military Medicine.

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"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

CHALISOV, I.A.; BERLIN, L.B.

Restorative processes in the mucous membrane of the duodenum after a radiation injury. Dokl. AN SSSR 151 no.6:1450-1452 Ag '63. (MIRA 16:10)

1. Voyenno-meditsinskaya akademiya im. S.M.Kirova. Predstavleno akademikom N.N.Anichkovym.

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PRIDVIZHKIN, I.G.; BERLIN, L.B.

Embryonic histogenesis of the epidermis and its derivatives. Dokl. AN SSSR 158 no.1:199-201 S-O '64 (MIRA 17:8)

1. Leningradskiy pediatricheskiy meditsinskiy institut. Predstavleno akademikom Ye. N. Pavlovskim.

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lytic effect of cystamine were studied. The results demonstrated that the prime-

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"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

BERLIN, L.B.; PRIDVIZHKIN, I.G.

Histochemical study of glycogen in the skin of the human embryo. Dokl. AN SSSR 160 no.1:213-215 Ja '65.

(MIRA 18:2)

1. Leningradskiy pediatricheskiy meditsinskiy institut. Submitted May 8, 1964.

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BERLIN, L.B., dotsent (Leningrad P-10, Primorskiy prospekt, d.39, kv.3)

Changes in the skin following thermal burns; a review of literature. Ortop., travm. i protez. 26 no.2:75-82 F '65. (MIRA 18:5)

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"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

AEROV, M.E.; BOYARCHUK, P.G.; SVISTUNOV, V.G.; BERLIN, L.F.; BORODULIN, A.A.

Hydraulic study of two-downcomer rectification plates. Khim. i tekh. topl. i masel 8 no.5:47-51 My '63. (MIRA 16:8)

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"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

Co

18

The extraction of phosphoric acid from low-grade phosphorites with a mixture of sulfuric acid and ammonium sulfate. S. I. VOLFKOVICH AND L. K. BERLIN. *Mineral'noe Suir'e i Tsvetnie Met.* 4, 396–407(1929).—The most effective mixt. contains 16.6–22.2% $(NH_4)_2SO_4$. Amts. above 22.2% decrease the efficiency of extn. With the above mixt. the rate of extn. is the same as when H_2SO_4 alone is used. The amt. of lower oxides in exts. is considerably decreased by the presence of $(NH_4)_2SO_4$. By increasing the time of extn. all lower oxides can be eliminated from the exts. Addn. of $(NH_4)_2SO_4$ to H_2SO_4 speeds up filtration of the above exts. The $(NH_4)_2SO_4$ used may be obtained by treating gypsum-phosphorites with NH_3 and CO_2. M. A. J.

COMMON ELEMENTS

OPEN

MATERIALS INDEX

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205010003-0

CA

16

Fertilizers. Nauchnuii Institut po Udobreniyam im. Prof. Samoilova and S. I. Volfkovich, L. E. Berlin and A. A. Ioras. Russ. 26,310, Oct. 30, 1930. Fertilizers are prepd. by extg. nephelite-apatite ore with H_2SO_4 directly or after treatment with NH_3, or NH_4 or K salt and drying at 100 to 150°.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

BC

B-I-8

Production of superphosphate from Khibine apatite. S. I. Volynovich and L. E. Ehrlin (Udobrenie Urozhai, 1930, 2, 11—24).—Samples of apatite (0·15 mm., 35—51%; 0·15—0·3 mm., 44—49%) gave a product with poor physical properties; others (0·3 mm., 21—58%) gave an improved product. Preheating of the sulphuric acid and addition of calcium carbonate to the apatite had no influence on the course of the reaction. Mixtures of sulphuric and hydrochloric acids gave a product with good, and those of sulphuric acid and sodium chloride one with fair, physical properties. Addition of ammonium sulphate improved the product.

CHEMICAL ABSTRACTS.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

Co

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The production of superphosphate from Khibinsk apatite. S. I. Volfkovich, L. B. Berlin and L. B. Grinshtein. *Udobrenie i Urozhai (Fertilizers and Crops)* 2, 300–12 (1930); cf. *C. A.* 23, 763.—Enriched apatite obtained from nepheline apatite rock by fine grinding and sieving or flotation is used on a semifactory scale for the production of acid phosphate. The quantity of H_2SO_4 to be used was based on the following equation: $3Ca_5F(PO_4)_3 + 7H_2SO_4 + 17H_2O = 3CaH_4(PO_4)_2.H_2O + 7CaSO_4.2H_2O + 2HF$. It was found that by using 88% of the rock milled to less than 0.1 mm. a 40% P_2O_5 raw product was converted to acid phosphate of a good phys. condition with 18% sol. P_2O_5. With 83% milled to less than 0.1 mm. the raw product contained 38.9% P_2O_5 and the final acid phosphate 16.2% P_2O_5. When the quantity of particles less than 0.1 mm. fell below 28–34% P_2O_5 the phys. condition of the final product was poor. It was found possible to mix the high grade nepheline apatite with the Vyatka raw phosphate low in P_2O_5 (24.5% P_2O_5), half and half, and still obtain a good product. J. S. Joffe

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

Co

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Superphosphates enriched with ammonia. S. I. Volfkovich, L. K. Berlin, I. L. Hofman and A. A. Ionas. *Udobrenie i Urozhai* (*Fertilizers and Crops*) 2, 495–504 (1930).—Tests were made of mixing H_2SO_4 with $NH_4H_2PO_4$, with $(NH_4)_2HPO_4$, with a mixt. of both, and with $(NH_4)_3PO_4$. The factors studied were the quant. relationship of the reagents, order of mixing, duration of process and temp. involved. A definite amt. of H_2SO_4 was placed in a Pb container, and the various NH_3 phosphates were added gradually. A stirrer was started and raw phosphates were added slowly, lumping being avoided. The stirring lasted 1–2 min., after which the mixt. was placed in a thermostat at 95–105°. After 3 hrs. the mixt. was weighed, to follow the loss in wt., and placed in thin layers on paper; it was left that way for 2 days and weighed again. Analyses were then made. Total H_2O-sol. and citrate-sol. P_2O_5 were then detd. Methods of prepg. the various NH_4 phosphates, as well as the amts. of H_2SO_4 used with them, are given.

J. S. Joffe

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Superphosphate enriched with ammonia. S. I. Volfkovich, I. R. Berlin, I. L. Hofman and A. A. Ionas. *Udobrenie i Urozhai* (*Fertilisers and Crops*) 2, 556–69 (1930).—Two kinds of raw phosphate were tried out in the prepn. of ammoniated superphosphate by the use of H_2SO_4 and the phosphates of ammonia. From Portland phosphate with mono-ammonium phosphate and H_2SO_4 a product was obtained contg. 21% P_2O_5, with 16.5% available, and 10% N. The amt. of H_2SO_4 used was 15% above that required by the stoichiometric equations, and its strength was diluted to 40% by the use of a 26% soln. of $NH_4H_2PO_4$. When a mixt. of mono- and di-ammonium phosphates was used, the product contained 22% P_2O_5, with 18% available, and 3% N. The H_2SO_4 was also 15% above the stoichiometric and was diluted to 35% with 26% $NH_4H_2PO_4$. With $(NH_4)_2HPO_4$ alone the product contained 23% P_2O_5, with 19% available, and 5% N. The H_2SO_4 was 10% above stoichiometric, and it was diluted to 25% with a 26% soln. $(NH_4)_2HPO_4$. For the Saratov phosphates triammonium phosphate (in liquid form) with H_2SO_4 was used, and the product obtained was 22–23% P_2O_5, with 20.5% available, and 10% N. The optimum conditions were: 100 parts (by weight) of phosphate for 80 parts of $(NH_4)_3PO_4$; for each unit weight of $(NH_4)_3PO_4$ 0.5 part of 60 Bé. H_2SO_4 was used besides what is necessary to convert the raw phosphate into superphosphate. By using a satd. soln. of $(NH_4)_3PO_4$ the product contained 18% P_2O_5, with 17% available, and 5% N. The reagents used, were: 100 parts of phosphate, 160 parts of the satd soln. with 0.74 part of 60 Bé. H_2SO_4 for each part of $(NH_4)_3PO_4$ besides what is necessary for the production of ordinary superphosphate. The best product from the standpoint of phys. conditions was obtained by the use of the mixt. of mono- and di ammonium phosphate. Production on a semi-factory scale is under way with the mixts. mentioned.

J. S. Joyce

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Experiments on the manufacture of superphosphate from Khibinsk apatite. S. I. VOLFKOVICH AND L. E. BERLIN. *J. Chem. Ind.* (Moscow) 7, 86-105(1930); cf. *C. A.* 23, 763, 1619. J. S. JOFFE

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Khibin apatite and the methods of converting it into fertilizers. L. E. Berlin. *Udobrenie i Urozhai* (*Fertilizers and Crops*) 3, 695–703(1931).—Apatite ore contg. 30% P_2O_5 is suitable for the production of low-grade superphosphate. For the manuf. of 14% superphosphate the ores concd. by the flotation process or by the crushing method are used. For double superphosphate, ores contg. more than 30% P_2O_5 must be used. For the production of enriched phosphates, phosphoric acid and amophos the ext. obtained from the ores contg. 30 to 32% P_2O_5 is used. For thermophosphates ores contg. not less than 28% P_2O_5 are most suitable. For elec. volatilization of P_2O_5 any grade of ore, even as low as 16% P_2O_5, may be used. I. S. Joffe

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2 I 8

Preparation of double and of enriched superphosphates from low-grade phosphorites. S. I. Volfkovitsch and L. R. Berlin (J. Chem. Ind. Russia, 1931, 8, No. 13, 1—11).—A product containing 37—38% P_2O_5 and 1—12% H_2O is obtained by heating phosphorite in a rotating drum for 1—3 hr. at such a temp. that the issuing vapours are at 90—100°.

R. Truskowski.

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Decomposition of Khibin apatite-nephelite ore by sulfuric acid. S. I. Vol'fkovich, L. Berlin, A. Vinokurova and A. Salova. *J. Chem. Ind.* (Moscow) 8, No. 15-16, 1-8(1931).—The order of decreasing rapidity of decompn. of the minerals in this ore by H_2SO_4 is nephelite, apatite, titanomagnetite and egirite. The amts. of acid used for mixts. of these must be the sum of the amts. used to dissolve the individual minerals. When small amts. of egirite are present, however, they may be disregarded. Since the SiO_2 gel formed on decompn. of apatite-nephelite ores by acid tends to cover up the phosphate and prevent soln., it is best to use strong acid and very finely ground ore. High temps. are no help. The amt. of acid in excess of the theoretical amt. must be detd. empirically. The apatites, in general, decomp. more slowly than other phosphate ores.

H. M. Leicester

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Double superphosphates. L. E. Berlin. *Minéraln. Oudobr.* 1, 41-8(1932); *Chimie & industrie* 30, 000; cf. *C. A.* 28, 264[9].—A discussion of their prepn. from apatite concentrates and from phosphorites. A. P.-C.

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The preparation of ammonium superphosphates from Egor'ev phosphorite and Khibin apatite. L. Berlin and L. Goritskaya. *J. Chem. Ind.* (Moscow) 1932, No. 2, 31-41.—NH_3 superphosphates are best obtained by treating the prepd. superphosphate with gaseous NH_3. Decompn. of the phosphorite with $(NH_4)_2SO_4$ and H_2SO_4 gives a poorer quality of superphosphate. The quality of the best product does not deteriorate on standing.

H. M. Leicester

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Physicochemical investigation of the process for manufacturing ammonium phosphates (ammophos). S. I. VOLFKOVICH, L. E. BERLIN AND B. M. MANTSEV. *J. Applied Chem.* (U. S. S. R.) 5, 1-14(1932).—The alk. part of the isotherm H_2O-NH_3-P_2O_5-SO_3 has been investigated at 25°. Soly. of $NH_4H_2PO_4$ increases greatly in presence of $(NH_4)_2HPO_4$, while that of $(NH_4)_2HPO_4$ increases only slightly on addn. of $NH_4H_2PO_4$. Soly. of $(NH_4)_2HPO_4$ is lowered about 1/3 in the presence of $(NH_4)_3PO_4 \cdot 3H_2O$. Soly. of $(NH_4)_3PO_4 \cdot 3H_2O$ decreases about 4 times in the presence of small quantities of $(NH_4)_2HPO_4$, but remains const. on further addns. Soly. of NH_4 phosphates is lowered about 1/3 in the presence of $(NH_4)_2SO_4$. Soly. of $(NH_4)_2SO_4$ is lowered somewhat in the presence of $(NH_4)_2HPO_4$ or $(NH_4)_3PO_4$, but first slightly increased and then lowered on adding successive quantities of $NH_4H_2PO_4$. The concn. of P_2O_5 at the binary point $NH_4H_2PO_4$-$(NH_4)_2HPO_4$ is lowered by 1.5 and at the binary point $(NH_4)_2HPO_4 \cdot 3H_2O$-$(NH_4)_3PO_4$; it is increased by 3 in presence of $(NH_4)_2SO_4$. Addn. of NH_3 to satd. $NH_4H_2PO_4$ soln. first increases greatly the P_2O_5 content of soln. up to the binary point $(NH_4)_2HPO_4$-$NH_4H_2PO_4$, but then lowers it practically to zero when NH_3 concn. is high. A similar effect is observed on adding NH_3 to a soln. of $(NH_4)_2SO_4$ and $NH_4H_2PO_4$. On adding NH_3 to a soln. contg. H_3PO_4, or H_3PO_4 and H_2SO_4, the $(NH_4)_3PO_4 \cdot 3H_2O$ in the ppt. is almost free of sulfate and contains practically all of the P_2O_5 (provided SO_3:P_2O_5 is not over 4:1). The use of $(NH_4)_2SO_4$ permits pptn. of not over 2/3 of the P_2O_5 in the soln. Double salts contg. NH_4 phosphate and sulfate were not found. V. KALICHEVSKY

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Preparation of enriched potassium superphosphates. L. Berlin and L. Goritzkaya. *Kalii* (U. S. S. R.) 1933, No. 1, 26–32.—Lab. expts. are given for the prepn. of superphosphates with higher than 12.61% of P_2O_5 in available form for plants. The results indicate that a product with 17.55% P_2O_5 in available form and contg. 8% K_2O is technically possible. James Sorrel

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Experiments on drying simple and double superphosphates. L. E. Burin and S. T. Kalugina. *J. Chem. Ind.* (Moscow) 1932, No. 5, 46-51.—When simple or double superphosphates are dried at 100-50° to a moisture content of 4-7%, their properties are somewhat improved. When they are dried at higher temps. or to const. wt., their content of insol. P_2O_5 is increased. The dried products are only slightly hygroscopic. H. M. Leicester

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B-I 8

Preparation of double and enriched superphosphates from Khibin apatite. L. [illegible] and V. Mikerov (J. Chem. Ind. Russ., 1933, No. 6, 55—62). —Good yields of $CaH_4(PO_4)_2,H_2O$ are given by apatite concentrates and a mixture of H_2SO_4 and H_3PO_4, obtained by the action of H_2SO_4 on phosphorite. R. T.

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Physicochemical investigation on the preparation of ammonium phosphates. II. The solubility isotherm of the system: H_2O-NH_3-P_2O_5-SO_3 at 25°. L. E. Berlin and B. M. Mantsev. *J. Applied Chem.* (U. S. S. R.) 6, 285-9(1933).—The following detns. are given: (1) the isotherm of the system H_2O-NH_3-P_2O_5-SO_3; (2) the crystn. surface of NH_4 phosphates, $(NH_4)_2SO_4$ and $(NH_4)_2H(SO_4)_2$; (3) the boundary curves of the crystn. surface of $(NH_4)_2SO_4$ with the surfaces of $NH_4H_2PO_4$, $(NH_4)_2SO_4$ and $(NH_4)_2H(SO_4)_2$ and the soly. of NH_4 thiophosphate. The satd. solns. corresponding to the crystn. surfaces of $NH_4H_2PO_4$.NH_4HSO_4 and $(NH_4)_2H(SO_4)_2$ and the acidic part of the crystn. surface of $(NH_4)_2SO_4$ contain an approx. const. amt. of NH_3 (10-11%). In the soln. corresponding to the alk. part of the crystn. surface of $(NH_4)_2SO_4$ there is originally a slight decrease in the NH_3 content and it increases rapidly with a simultaneous slow decrease in the P_2O_5 and SO_3 contents. The satd. solns. which correspond to the acidic part of the crystn. surface of $NH_4H_2PO_4$ contain, depending upon the decrease of the acidity (P_2O_5 content), from 4% (in the soly. curve of $NH_4H_2PO_4$ in phosphoric acid) up to 11% (boundary curve of $NH_4H_2PO_4$-$NH_4H_2PO_4$.NH_4HSO_4) of NH_3. In the solns. corresponding to the crystn. surface of $(NH_4)_2HPO_4$ the fluctuation of the NH_3 content is insignificant (11-13%). Depending upon the increase of the alky. of the solns. which correspond to the crystn. surfaces of $(NH_4)_3PO_4.3H_2O$, the NH_3 content originally decreases (up to 5% in the solvation point $(NH_4)_3PO_4.3H_2O$) and increases then sharply with a simultaneous rapid decrease in the P_2O_5 content. The exptl. procedure is described and numerical data are tabulated. A. A. Boehtlingk

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Ammonization of double superphosphates. L. [illegible] and L. Goritskaja (J. Chem. Ind. Russ., 1933, [illegible], No. 10, 21—27).—Fertilisers (I) containing NH_3 8·5, H_2O-sol. P_2O_5 14, and assimilable P_2O_5 29% are obtained from NH_3 and double superphosphate (II), freshly prepared from phosphorite; analogous products can be prepared from (II) from apatite concentrates. (I) of a higher NH_3 content can be prepared but loses NH_3 on storing. R. T.

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Preparation of double superphosphates from apatite concentrates and phosphoric acid. I. L. E. Berlin, L. Antochina, A. Vinokurova, L. Oschkrovitsch, and A. Salova. II. L. E. Berlin, V. G. Mikerov, and E. N. Shukov (J. Chem. Ind. Russ., 1933, 10, No. 10, 37—45, 45—47).—I. Double superphosphate (I) is obtained according to the reaction $2Ca_5F(PO_4)_3 + 14H_3PO_4 + 10H_2O \rightarrow 10CaH_4P_2O_8.10H_2O + 2HF$ by heating apatite concentrates at 40—100° during 3 hr. with a 10—30% excess of 70—80% H_3PO_4. (I) contains 34—51% of assimilable P_2O_5, representing 80—95% of the total P_2O_5 content.

II. The above process gives good results when performed on a semi-factory scale. The product is harder and denser than ordinary superphosphate, and does not deteriorate on storing. R. T.

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The methods of obtaining ammoniated superphosphate. L. R. Berlin. *Trans. Sci. Inst. Fertilizers* (Moscow), No. 113, 64-74(1933).—B. presents data on the production of ammoniated superphosphate by treating rock phosphate with acids and passing gaseous NH_3 into the mixt. He takes up the quant. relationships for the successful operation of this process with a no. of types of rock phosphate. The speed of admitting the NH_3 into the acid-rock phosphate mixts., the temp., the time period and other factors involved are discussed. It is pointed out that such ammoniated superphosphate maintains a good phys. condition, does not take up so much moisture and holds the NH_3. J. S. Joffe

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Production of concentrated potassium-ammonia superphosphates. L. E. Berlin and L. S. Goritzkaya. *Kalii* 1934, No. 5, 19-27; cf. *C. A.* 28, 2100[8].—A description of expts. with decompn. of phosphate rock. The phosphate rock was treated with the following mixts.: (1) 78% H_2SO_4 and KNH_4HPO_4, (2) 78% H_2SO_4 and $K_2(NH_4)_2(PO_4)_2$, (3) 78% H_2SO_4 and $K(NH_4)_2PO_4$, (4) 78% H_2SO_4 and $K_2NH_4PO_4$. The superphosphates obtained by the treatment with these mixts. had the following compns. (in % by wt.): (1) total P_2O_5 18.50, available P_2O_5 15.84, K_2O 8.15, NH_3 1.95, Cl 2.0; (2) total P_2O_5 19.01 available P_2O_5 16.6, K_2O 5.95, NH_3 2.94, Cl 4.06; (3) total P_2O_5 18.61, available P_2O_5 13.04, K_2O 4.26, NH_3 3.49, Cl 3.66; (4) total P_2O_5 17.34, available P_2O_5 15.06, K_2O 5.21, NH_3 1.20, Cl 4.01. The compn. of the phosphate rock treated was, in %: P_2O_5 25.51, $(Al, Fe)_2O_3$ 5.79, CO_2 4.8. The rock was treated with mixt. (1) as follows: KCl was dissolved in H_3PO_4 (19.5%) to form KH_2PO_4; NH_3 was then passed through the soln. to form KNH_4HPO_4 which was added to the 78% H_2SO_4, the mixt. stirred and the phosphate rock introduced. In treatment with (2), (3) and (4) NH_3 gas was passed through H_3PO_4 soln. first, the resulting ammonium phosphate added to 78% H_2SO_4 and then the KCl together with phosphate rock was introduced. Conclusions: For the best results the theoretical quantity of H_2SO_4 should be used and the concn. of acid should be 50% after it is mixed with the $K_2NH_4PO_4$ soln.; increase of KCl/NH_3 in prepd. mixts. increases the available P_2O_5/total P_2O_5 ratio in the superphosphates; storage of the superphosphate exposed to the air does not change its compn.

James Sorrel

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The ammoniation of superphosphate in the U. S. S. R. L. Rudin. *J. Chem. Ind.* (Moscow) 1935, No. 1, 37–44.—Treatment of superphosphate from Russian phosphorite with gaseous NH_3 introduces up to 4% NH_3 in the final product, which has better phys. properties than the starting material. To raise the NH_3 content, the superphosphate is mixed with NH_4NO_3 soln. for a day. This gives a content of 8% NH_3. If urea is used instead of NH_4NO_3, less NH_3 is introduced. However, a mixt. of NH_4NO_3 with a little urea gives an excellent product, which does not corrode app. H. M. Leicester

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Treating ordinary and acid superphosphates with ammoniacal solutions of ammonium nitrate. L. Berlin, L. Goritskaya and A. Zasedateleva. *Mineral'nye Udobreniya Insektofungisidai* 1, No. 4, 21-37(1935); cf. *C. A.* 29, 3094[6].—When ammoniacal NH_4NO_3 was introduced into the superphosphates in batches, the following ratios of $N:P_2O_5$ in the product were obtained: (*a*) Ordinary superphosphate from phosphorite and unconcentrated apatite, $N:P_2O_5$ = 0.5–1.2; (*b*) ordinary superphosphate from floated apatite after storage for 20–30 days, $N:P_2O_5$ = 0.4–0.7; (*c*) double superphosphate from Vyatka phosphorite, $N:P_2O_5$ maximum 0.3; (*d*) double superphosphate from 35 and 40% apatite concentrates, $N:P_2O_5$ up to 0.75. Continuous satn. in the lab. yielded a sticky product. Commercial-scale expts. were successful. A detailed description of the expts. is presented.

A. A. Boehtlingk

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Obtaining potassium superphosphate. I. Berlin and I. L. Goritzkaya. *Khim* 1935, No. 2, 18-23.—K superphosphate was prepd. by heating for 3 hrs., at 95-105°, a mixt. of 200 g. phosphorite, (25.51% P_2O_5), 10-100 g. crude KCl and a theoretical amt. of H_2SO_4 (52°Bé.), calcd. on the basis of P_2O_5, CO_2, Fe_2O_3 and Al_2O_3 in the phosphorite. The product was nonhygroscopic and had the compn.: total P_2O_5 9.9-14.6, H_2O-sol. 8.6-10.3, citrate-sol. 0.6-2.1; K_2O 1.6-12.2, and Cl, 2.5-10.4%. Increasing the amt. of KCl in the mixt. aided decompn. of the phosphorite. Increasing the amt. of H_2SO_4 above the theoretical amt. indicated above affected unfavorably the phys. properties (hygroscopicity) of the product, without changing much its chem. properties. On storage, the available P_2O_5 increased slightly and the H_2O-sol. P_2O_5 decreased slightly, while the Cl content remained unchanged.

S. L. Madorsky

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Co

18

The production of boric acid in the U. S. S. R. L. R. Berlin. *J. Chem. Ind.* (Moscow) 12, 821-8(1935).—The app. and methods used for decompn. of datolite by H_2SO_4 and extn. of H_3BO_3 from the residue are discussed.

H. M. Leicester

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B-I-8

Hygroscopicity and water content of super-phosphate from fluctuated apatite. [illegible] (J. Chem. Ind. Russ., [illegible], 13, 24—31).—Decomp. of superphosphates is at a max. on the 10th day of storage, at R.H. 75—100%. The hygroscopicity of the products varies with their $Ca(H_2PO_4)_2$ and free acid content, and their final H_2O content may vary from 10% to 40%.

R. T.

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BC

B-III-1

Preparation of phosphorus-nitrogen fertilizers based on urea-ammonia liquor. L. Berlin and L. Gorytskaja (J. Chem. Ind. Russ., 1939, 23, 1398—1405).—The product obtained by adding urea-NH_3 liquor (I) to double superphosphate, to a total N content of 14·5% (urea-N 7·5%), does not deteriorate when stored in open containers for 4 months. The assimilable P content of fertilizers prepared analogously from simple superphosphate (P_2O_5 20%) falls when the total N content is > 8·5%, but satisfactory products containing 12% N may be obtained by adding a mixture of (I) and NH_4NO_3 to the superphosphate. Loss of NH_3 from $NH_4H_2PO_4$ (II) does not occur during drying at 100°, while a 1:1 mixture of (II) and $(NH_4)_2HPO_4$ (III) loses 5% of its NH_3 after 3 hr. at 100°, but not at 60°. (III) loses 25% of its NH_3 after 3 hr. at 60°. R. T.

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BC

B-2-10

Preparation of nitrogen-phosphorus-potassium fertilisers from Viatka phosphorite, potassium chloride, and nitric acid. L. BERLIN, I. NIKONOVA, and R. FISKINA (J. Appl. Chem. Russ., 1937, 10, 970—987).—Phosphorite (I) is heated at 800° for 1 hr., treated with 35% HNO_3 (6 mols. of HNO_3 per mol. of $Ca_3P_2O_8$, and 2 mols. per mol. of $CaCO_3$), and the resulting suspension filtered after 20 min.; the residue is washed with 50—100 pts. of H_2O per pt. of (I) taken. Under these conditions 92—96% of the P_2O_5 is extracted, with a loss of 5—7% of the N introduced as HNO_3 (due chiefly to evolution of N oxides). 16% aq. CaO is added gradually (during 30 min.) to the filtrate, to p_H 6—6·4, at room temp., and the suspension stirred for 15—30 min. The ppt. so obtained contains H_2O 50, P_2O_5 (99% citrate-sol.) 11—12·5, and N 3·5%; its hygroscopicity rises with its $Ca(NO_3)_2$ (II) content, and is lowered by washing, which also causes increase in the $[P_2O_5]$. The filtrate + washings are conc. to 30% (II), an equiv. amount of KCl is added, and the solution cooled to 0°, when 63% of the NO_3' separates as KNO_3. Up to 80% of the chloride contaminants of the KNO_3 may be removed by repeated washing with the wash-H_2O from the previous operation. A satisfactory solution of the problem of utilising the mother-liquor from crystallisation of KNO_3 was not found.

R. T.

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Obtaining superphosphate from apatite concentrates of different degrees of grinding, with addition of phosphate to the product. L. Berlin, O. Voznesenskaya, L. Goritskaya and A. Sergeva. *J. Chem. Ind.* (U. S. S. R.) 14, 1833-43(1937).—Apatite concentrates between 100 and 200 mesh are heat treated with 68-72% of their wt. of 11.8% H_3PO_4. The excess acidity is neutralized with 4% of bone meal or apatite concentrate, and the mixt. is allowed to stand 30 days. A good quality of superphosphate is formed.

H. M. Leicester

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Ca

Preparation of boric acid from borates. L. Berlin. *Novosti Tekhniki* 1938, No. 3, 39.—The ore (60-mesh) was decompd. in vertical retorts with H_2SO_4, dild. to 15-20% with wash water, at 90-95° within 45-60 min. After crystn., the product contained moisture 0.5 and sulfate up to 0.5%.

A. A. Podgorny

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Utilization of mother liquor of boric acid for fertilizer. L. Berlin. *Novosti Tekhniki* 1938, No. 3, 40-1.—The mother liquor obtained in the manuf. of H_3BO_3 (preceding abstract) contained H_3BO_3 2, free H_2SO_4 0.6-1.0, $MgSO_4$ 21-4 and other mixts. less than 1%. The liquor was neutralized with lime and evapd. to dryness. The product was used as a fertilizer with good results. A. A. P.

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18

The production of boric acid and borax. L. Berlin. J. Chem. Ind. (U. S. S. R.) 15, No. 6, 20-3(1938); cf. C. A. 32, 4729[4].—Russian methods are described.
H. M. Leicester

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The preparation of boric acid from Indar borates by the sulfuric acid method. I. K. Berlin. *J. Chem. Ind.* (U. S. S. R.) 15, No. 10, 12-16(1938); cf. *C. A.* 32, 4729[4].—The chief ore, $CaMgB_6O_{11}.6H_2O$, is treated with 25% less than the theory of H_2SO_4 at 80° for 15 min. The final concn. of H_2SO_4 should be 8-13%. Details of filtering and washing the product are given. H. M. L.

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CA

Fertilizer. L. E. Berlin (to Nauchnyi Institut po Udobreniyam i Insektofungisidam). Russ. 55,030, Sept. 30, 1939. The mother liquor obtained in the manuf. of H_3BO_3 from minerals contg. B and Mg is treated with NH_3 and(or) CO_2 to ppt. Mg, and the soln. treated with H_2SO_4 or H_3PO_4 and evapd. to dryness. Cf. C. A. 37, 3874[1].

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BERLIN, L. E.

(see Kurman, I. M. and Vol'Frkvich, S. I.) "Boromagnesium Phosphate Fertilizers," L. E. Berlin, inventor, Sci Inst of Fert and Insectofung im Ya. V. Samoylov, Pat 55, 194 (USSR), 31 July 1939 (SEE: Inst. Insect/Fung. in Ya. V. Samoylov)

SO: U-237/49, 8 April 1949

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BERLIN, L. E.

"Khibin Apatite," S. I. Vol'fkovich, M. P. Fiveg, and L. E. Berlin, Nauch Inst Udobreniyam i Insektofungisidam Zhur 1919-39, pp 17-24 (1939), Khim Referat Zhur 1940, No 6, pp 86 (SEE: Inst. Insect/ Fungi. in Ya. V. Samoylov)

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Boric acid from domestic [Russian] raw materials. I. M. Kurman, L. E. Berlin and M. B. Katalymov. *Nauch. Inst. Udobreniyam i Insektofungisidam Ya. V. Samoilova* 1919-39, 67-71(1939); *Khim. Referat. Zhur.* 1940, No. 6, 97.—Tests were made to produce H_3BO_3 from datolites (B_2O_3 3-8%), tourmaline tailings (B_2O_3 2.5-6.0%) and inder borates (B_2O_3 up to 20-30%). The mother liquors of the H_3BO_3 production can be utilized for B-Mg fertilizers, $NH_4B(SO_4)_2$ and addnl. amts. of H_3BO_3.

W. R. Henn

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CA

The boron industry of the U. S. S. R. and the prospects for its development. L. E. Berlin. *J. Chem. Ind.* (U. S. S. R.) 16, No. 11, 3-7(1939). H. M. Leicester

Hydrogen by water-gas reaction. M. Kurokawa and Y. Takemaka. *Fuel* 19, 140-9(1940).—See *C. A.* 34, 50039. D. A. Reynolds

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18

A belt vacuum filter in the production of boric acid. L. E. Berlin and A. A. Sokolovskii. *J. Chem. Ind.* (U. S. S. R.) 17, No. 8, 21-4(1940).—The use of such app. for filtering and washing the pulp after decomp. the ore with H_2SO_4 gives better results than use of a filter press or Nutch filter.

H. M. Leicester

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CA

18

Investigation of equilibrium systems in the production of ammonium phosphates. S. I. Vol'fkovich, L. R. Berlin and B. M. Mantsev. *Trans. Sci. Inst. Fertilizers Insectsfungicides* (U. S. S. R.) No. 153, 228-41(1940).—An investigation was made of soly. in the system H_2O-NH_3-P_2O_5-SO_3 at 25° in acid and alk. media. Soly. of $NH_4H_2PO_4$ increases greatly upon addn. of $(NH_4)_2HPO_4$ but soly. of the latter increases insignificantly upon addn. of the former. Soly. of $(NH_4)_2HPO_4$ decreases approx. half upon addn. of $(NH_4)_3PO_4.3H_2O$ but the soly. of the latter upon the addn. of $(NH_4)_2HPO_4$ at first drops to about 0.25 its former value and upon further addn. remains const. Soly. of ammonium phosphates decreases to nearly one-half upon the addn. of $(NH_4)_2SO_4$ while soly. of the latter with the addn. of $NH_4H_2PO_4$ increases at first to a small extent and then drops and with the addn. of $(NH_4)_2HPO_4$ and $(NH_4)_3PO_4.3H_2O$ it drops to a small extent. Addn. of NH_3 to a soln. satd. with $NH_4H_2PO_4$ at first greatly increases the content of P_2O_5 up to the double point of $NH_4H_2PO_4$-$(NH_4)_2HPO_4$ and then there is a rapid decrease in the P_2O_5 content which drops nearly to zero in a strongly ammoniacal soln. Similar observations were made upon the addn. of NH_3 to a soln. satd. with $NH_4H_2PO_4$ and $(NH_4)_2SO_4$. B. Z. Kamich

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