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ZARETSKAYA, I.I.; SORKINA, T.I.; TORGOV, I.V.

Condensation of 1-vinyl-6-methoxy-3,4-dihydronaphthalene with 2,4-dimethyl-Δ^2-cyclopentene-1,5-dione. Izv. AN SSSR. Ser. khim. no.6:1058-1061 '65. (MIRA 18:6)

1. Institut khimii prirodnykh soyedineniy AN SSSR.

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KAZARNOVSKIY, Ya.S.; KOLODEYEV, I.P.; SORKINA, Ye.M.; IRLIN, A.L.
SOLNTSEVA, L.N.

Oxidative thermal pyrolysis of hydrocarbon gases to acetylene.
Khim. prom. no. 7:547-551 O-N '60. (MIRA 13:12)
(Hydrocarbons) (Acetylene)

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SORKINA, Ye.Z.

Clinical aspects of early primary tuberculosis in school children. Probl. tuberk., Moskva no. 3:37-41 May-June 1952. (CLML 22:4)

1. Candidate Medical Sciences. 2. Of the Dispensary Sector (Head -- Prof. S. Ye. Nezlin), Institute of Tuberculosis of the Academy of Medical Sciences USSR (Director -- Z. A. Lebedeva).

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SORKINA, Yu. A.; CHERNOV, V. A.

Antineoplastic activity of some piperazine derivatives. Vop. onk. 8 no.1:77-84 '62. (MIRA 15:2)

1. Iz laboratorii eksperimental'noy khimioterapii opukholey (rukov. - kand. biol. nauk V. A. Chernov) otdela khimioterapii (rukov. - prof. G. N. Pershin) Vsesoyuznogo nauchno issledovatel'skogo khimiko-farmatsevticheskogo instituta im. S. Ordzhonikidze.

(PIPERAZINE) (CYTOTOXIC DRUGS)

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CHERNOV, V. A.; PISKOV, V. B.; SORKINA, Yu. A.; LYTKINA, L. G.; LYTKINA, V. B.

Antiblastic activity of compounds containing an ethylene bond joined to carbonyl. Vop. onk. 8 no.5:24-32 '62. (MIRA 15:7)

1. Iz laboratorii eksperimental'noy khimioterapii opukholey Vsesoyuznogo nauchno-issledovatel'skogo khimiko-farmatsevticheskogo instituta im. S. Ordzhonikidze i laboratorii radiologii instituta meditsinskoy i biologicheskoy khimii AMN SSSR. Adres avtorov:Moskva, G-21, ul. Zubovskaya, d. 7, Vsesoyuznyy nauchno-issledovatel'skiy khimiko-farmatsevticheskiy institut imeni S. Ordzhonikidze.

(ETHYLENE) (CARBONYL GROUP) (CYTOTOXIC DRUGS)

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SORKINA-FINKEL', L.I.

*From the pages of foreign biological and agricultural publications. Agrobiologia no.4:637-638 Jl-Ag '63. (MIRA 16:9)
(No subject headings)

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NEYMAN, N.F.; SORKINA-FINKEL', L.I.

From the pages of foreign biological and agricultural publications. Agrobiologiia no.6:950-952 N-D '63. (MIRA 17:2)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420013-7

NAYMAN, N.F.; SORKINA-FINKEL', L.I.

From the pages of foreign biological and agricultural publications. Agrobiologiia no.1:158-159 Ja-F '64 (MIRA 17:8)

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SORKINA-FRENKEL', Ye.

From the pages of foreign biological and agricultural publications. Agrobiologiia no.5:797-798 S-O '62. (MIRA 15:11)
(Bibliography—Agriculture)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420013-7

NEYMAN, N.F.; SORKINA-FINKEL', L.I.

From the pages of foreign biological and agricultural publications. Agrobiologiia no.2:317-319 Mr-Ap '63. (MIRA 16:7)
(Bibliography--Agricultural research)

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NEYMAN, N.F.; SORKINA-FINKEL', L.I.

From the pages of foreign biological and agricultural publications. Agrobiologiia no.3:476 My-Je '63. (MIRA 16:7)
(No subject heading)

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NEYMAN, N.F.; SORKINA-FINKEL', L.I.

From the pages of foreign biological and agricultural publications. Agrobiologiia no. 3:475-477 My-Je '64. (MIRA 17:7)

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NEYMAN, N.F.; SORKINA-FINKEL', L.I.

From the pages of foreign biological and agricultural publications. Agrobiologiia no.4:637 Jl-Ag '64. (MIRA 17:12)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420013-7

SORKO, L.M.

The reaction $p+p \rightarrow \pi^0 + p + p$ in the 400-660 Mev. range. Zhur. eksp. i teor. fiz. 30 no.2:296-303 F '56. (MLRA 9:12)
(Nuclear reactions)

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SORLIN, Arsene

Variations of the lifetime of free minority carriers in germanium considered as a function of pressure. Bul Ac Pol mat 8 no.1:71-75 '60. (EEAI 9:11)

1. Instytut Fizyki, PAN. Presente par A.Soltan.
(Germanium)
(Semiconductors)
(Electric conductivity)
(Pressure)

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Capacity phenomena displayed at mercury capillary electrodes. J. Heyrovský, F. Sorm, and J. Forejt (Charles' Univ., Prague, Czechoslovakia). *Collection Czechoslov. Chem. Commun.*, 12, 11-38(1947)(in English).

The capillary electrodes used were the dropping Hg electrode and the streaming Hg electrode. The latter produces a continuously renewed uniform surface of Hg of suitable dimensions because the Hg is forced in a continuous stream as fine jet and upwards through 4-8 mm. of soln. For oscillographic studies this has the advantage that complications arising from a growing Hg drop are eliminated. Results obtained with both capillary electrodes were essentially the same. Studies were made with the polarograph and with a cathode-ray oscillograph. The latter could be connected either to show changes in the pattern of a square wave produced by the phenomena at the capillary electrode directly, or to give only the deriv. of this curve. It was found that certain relatively insol. substances, e.g., pyridine in alkali, butyric acid in acid, and ether in any electrolyte soln., produced a peculiar charging effect by their adsorption on the electrodes. This became apparent as a time-lag on the oscillographic curves or as a diminished condenser current on the polarographic curves which ceased at a characteristic voltage. It was concluded that this phenomenon is caused by a film of the nonelectrolyte adsorbed on the electrode. This film can break up suddenly and can also be rebuilt at speeds greater than 8000/sec.; it has no measurable resistance; it hinders the electroreduction of Pb^{++}, Cd^{++}, or nitrobenzene, but does not interfere with that of Tl^{+}. These results are thought to indicate that only one electron is obtained from the electrode by the bivalent ion at any one time and that a subsequent dismutation in soln.: $2Pb^{+} \rightarrow Pb + Pb^{++}$ is hindered by the adsorbed film.

Otto H. Müller

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

10

CA

The synthesis of 6-methylazulene. F. Šorm and J. Fajkuš (Inst. of Technol., Prague, Czechoslovakia). *Collection Czech. Chem. Commun.* 12, 81-100(1947).—*cis-1,2-Cyclopentanediacetic acid* (I), m. 166°, was prepd. by the method of Linstead and Meade (*C.A.* 29, 6115°). A small amt. of the *trans-acid* (II), m. 138°, was isolated in this prepn., by making the hydrolysis mixt. alk., extg. with C_6H_6, rehydrolyzing the ext. with concd. HCl, and isolating the product. II was prepd. by the Arndt-Eistert synthesis from 15 g. *trans*-1,2-cyclopentanedicarboxylic acid and 40 cc. $SOCl_2$, followed by treatment in Et_2O with CH_2N_2 (from 88 g. nitrosomethylurea) in ether. The resulting bis(diazoketone) was converted to the *diamide* of II by heating 35 min. with 350 cc. dioxane, 150 cc.

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PROCESSES AND PROPERTIES INDEX

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CA

A simple synthesis of racemic hygrine. F. Sorm (Society for Chemical and Metallurgical Production, Prague-Vysocany). *Collection of Czechoslov. Chem. Communs.* 12, 245-60(1947); cf. *C.A.* 26, 138. *1-Methyl-2-acetonylpyrrole* (I), obtained in 5.7-g. yield from 20 g. *1-methylpyrrole* (II) and 1 g. Cu bronze at 100° and dropwise addn. over 30 min. of a mixt. of 6.7 g. freshly distd. diazoacetone and 5 g. II, b_{10} 100-11°; 17 g. II was recovered from the reaction mixt.; I is very unstable; the semicarbazone m. 167° but cannot be purified due to instability. Freshly distd. I (6.3 g.) in 50 cc. HOAc and 0.4 g. PtO_2 (prepd. according to Adams) absorbed at 100 mm. pressure in 7 hrs. 1990 cc. H (0° and 760 mm.) (2030 cc. calcd.). The filtrate turned intensely red after standing 1 week at room temp., giving 3.8 g. (60%) *hygrine* (*1-methyl-2-acetonylpyrrolidine*) (III), b_{10} 88°. The picrate of III m. 155° (from EtOH); this sharp m. p. is the same as found for the picrate from natural III, but lower than the indistinct m. p. reported by Hess (*C.A.* 8, 127, 934). The oxime of III m. 125° (same as Hess) but the picrate of the oxime m. 166° (Hess, 165°).

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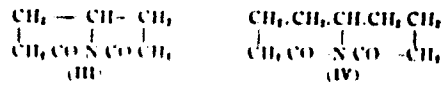
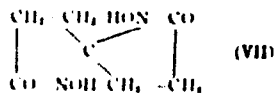
CIA

Symmetrical amino dicarboxylic acids and their cyclization. R. Lukeš and F. Šorm (United Chemical and Metallurgical Manufacturers, Prague-Vysočany). *Collection Czechoslov. Chem. Communs.* 12, 278-91(1947); cf. *C.A.* 27, 290; 28, 5825[1]. Sym. amino dicarboxylic acids, specifically γ-*aminopimelic acid* (I) and δ-*aminoazelaic acid* (II), were sought for subsequent ring closure to the bicyclic dilactams.



(III) (IV)

Di-Et γ-ketopimelate oxime (V), m. 38°, (50 g.) in 400 cc. 96% EtOH and 1.5 g. PtO_2 (according to Adams) and 0.2 g. $FeCl_3 \cdot 4H_2O$, absorbed in 150 min. 9070 cc. H (0° and 760 mm.) (9140 cc. calcd.) to give 40% *Et 2-pyrrolidone-5-propionate* (VI) and a little di-Et γ-ketopimelate, m. 58° (from C_6H_6 ligroin). I, obtained from 10 g. VI and 300 cc. N H_2SO_4 at 100° for 1 hr., m. 189°. Electrolytic reduction of 118 g. V, in 550 cc. 30% H_2SO_4 with Pb electrodes and cathode density of 4 amp. sq. dm., gave only 11 g. I, di-Et pimelate, and a cryst. product (VII), $C_7H_{10}O_4N_2$, possibly a



(VII)

which blackened at 230° but did not m. below 275° (little prisms from H_2O). *Diacetate*, from 0.5 g. VII and 10 cc. Ac_2O under reflux for 2 hrs., colorless needles, m. 190° (from EtOH). Reduction of 174 g. γ-ketopimelic acid with 280 g. $HCONH_2$ and 190 g. HCO_2H 95 hrs. with the temp. rising gradually from 170° to 210° gave a resin. Extn. with boiling 10% H_2SO_4 3 hrs., addn. of $Ba(OH)_2$, concn. of the filtrate to 200-300 cc., and addn. of 300 cc. EtOH gave a ppt. of 88 g. I, m. 190°, and some *2-pyrrolidone-5-propionic acid* (VIII), m. 128°. VIII, colorless crystals, was also obtained by heating 1 g. I at 200° 2 hrs. and extg. with 200 cc. C_6H_6. Heating I in a test tube in a bare flame 1.5 min. and then extg. with hot MeOH gave 52% III as needles several cm. long, m. 181° (from EtOH, then C_6H_6). Reduction of 28 g. δ-ketoazelaic acid, m. 110.5°, with 120 g. $HCONH_2$ and 80 g. HCO_2H 100 hrs. at 175-200°, gave 12 g. II, m. 192° (from EtOH). Heating II in an open tube at 200° 2 hrs. gave *2-piperidone-6-butyric acid* (IX), m. 146° (from C_6H_6). Further heating of IX, even distn. or refluxing 3 hrs. with 10 parts $SOCl_2$, gave no change to the desired IV. The dropwise addn. of a soln. of 0.5 g. Mg, 30 cc. Et_2O, and 2.55 g. $PhCH_2Cl$ to 0.7 g. III in the min. amt. of C_6H_6 gave an initial ppt.; ice and 10 cc. concd. HCl were added after 24 hrs. and a product, $C_{21}H_{22}O_3N$, m. 99° (colorless needles from EtOAc), was obtained, presumably *2,2-dibenzyl-5-pyrrolidonepropionic acid*. Drying at elevated temp. produced a loss of H_2O and formation of a vitreous mass. Reduction of 7 g. III in 60 cc. 30% H_2SO_4 electrolytically with a Pb cathode for 60 amp.-hrs. (10.8 calcd.) gave only a little *pyrrolizidine*; picrate m. 257° (cf. *Chem. Obzor* 18, 102(1943)). No monooxopyrrolizidine was found and 4 g. III was recovered. A sample of V which had been stored 1 year contained 10% of an ether insol. product, crystg. from H_2O as colorless strongly refractive prisms, darkening at 230° and analyzing as VII. The failure of IX to give IV, in contrast to the behavior of VIII is attributed to a functional difference in the amide groupings in these 2 compds.

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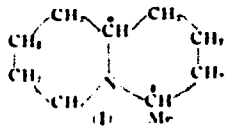
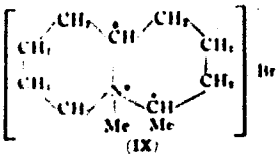
Syntheses in the allolupinane series. R. Lukeš and F. Šorm. *Collection Czechoslov. Chem. Communs.* 12, 356–67(1947).—A method used previously by Lukeš and Smetackova (*C.A.* 29, 794[1]; 28, 5825[7]) for the synthesis of *n*-substituted tertiary piperidines has been applied to the prepn. of allolupinane (I). $CH_2:CHCH_2MgBr$ and C_4H_9O gave 58%; $CH_2:CHCH_2CH_2CH_2OH$ (II), b. 135–



(I)



(IX)

7% II gave 51% $CH_2:CHCH_2CH_2CH_2Br$ (III) according to Jurvala (*C.A.* 25, 4844). To 249 g. III, 40 g. Mg, and 850 cc. Et_2O was added 113 g. 1-methyl-2-piperidone in Et_2O. The mixt. was decompd. the following day by ice and $Ba(OH)_2$, steam distd., and the distillate neutralized with 100 cc. 5 N HCl and evapd. *in vacuo*; on cooling crystals sepd. from which was liberated 60 g. of the rather unstable base, 1-methyl-2-(4-pentenyl)-1,4,5,6-tetrahydropyridine (IV), b_{18} 107°. (Some 1-methyl-2,2-bis(4-pentenyl)piperidine was probably formed also.) To IV·HCl in 50 cc. HCl (1:1) was added 400 g. Sn granules, and reaction continued by adding 50-cc. portions of HCl (total 500 cc.) at intervals during 33 hrs.; neutralization by solid NaOH, steam distn., exact neutralization of the distillate by HCl, evapn. *in vacuo*, liberation of the base, and distn. gave 2 fractions, b_{18} 110–43° and b_{18} 144–52°. Redistn. of the latter gave 29 g., b_{18} 146–7°, of 2-methyl-6-(4-methylamirobutyl)tetrahydropyran (V), did not absorb Br, 1.02 moles active H (Zerewitinoff), d_4^{20} 0.9635, n_C 1.47512, n_D 1.47778, n_F 1.48427, n_G 1.48086, MD 55.95, MD calcd. 56.04. Possible structures other than IV, 1-methyl-2-(4-hydroxypentyl)hexahydropyridine, and $MeNH(CH_2)_4CH(OH)(CH_2)_2CH:CH_2$ were ruled out. The formation of V is explained by a tautomeric ring opening of the hydrate of IV to $MeNH(CH_2)_4CO(CH_2)_2CH:$

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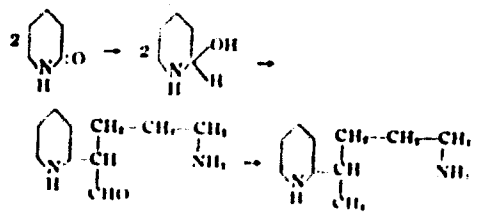
1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

CA

10

Action of propylmagnesium bromide on 2-pyrrolidone and 2-piperidone. R. Lukeš, E. Šorm, and Z. Arnold (Ecole polytech., Prague). *Collection Czechoslov. Chem. Communs.* 12, 641-6(1947)(in French); cf. *C.A.* 25, 102. PrMgBr (I) was made to react with lactams contg an active H on the N atom. Mg (33 g.) and 164 g. PrBr in 500 cc. Et_2O were converted to I, 500 cc. xylene added, and the Et_2O distd.; 29 g. *2-piperidone* in 60 cc. xylene was then added at 100° dropwise, more Et_2O distd. at 130°, and the mixt. kept at 140-5° 6 hrs. Addn. of H_2O and ice, then 700 g. BaO, neutralization of the steam distillate with 105 cc. *N* HCl, concn. to a small vol., and treatment with KOH gave the free bases. Two fractions were obtained from the Et_2O ext., 7.6 g. racemic γ-*conicine* (II), b_{11} 58.5°, and a possible *dimer* (III), $C_{10}H_{18}N_2$, b_{11} 118-22°. II *picrate*, from HCl soln. with 1 equiv. Na picrate, m. 79° (from EtOH); II *picrolonate*, from the free base and picrolonic acid in EtOH, m. 131°; III *picrate* m. 161° (from EtOH). The high b.p. of III points to a dimeric structure; its formation is attributed to the reducing action of I. The provisional reaction is:



I, from 50 g. Mg, 250 cc. PrBr in 800 cc. Et_2O, and 700 cc. xylene, was treated at 100° with 43.5 g. *2-pyrrolidone* in 50 cc. xylene; 3 fractions were obtained. *2-propylpyrrolidine* (IV), b_{10} 66-7°, 6 g. of a mixt. of *dipropylpyrrolidine* (V), and a base, $C_{11}H_{23}N$ (VI), b_{10} 125-35°. IV *picrate* m. 105-6°; the *benzenesulfonate* m. 68.5°; both gave no depression in mixed m.p. with authentic compds. V and VI were sepd. by crystn. of the *picrolonates* in EtOH, both as yellow needles. V *picrolonate* m. 240°; VI *picrolonate* m. 167°. VI has 3 Pr groups and a single double bond.

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PROCESSES AND PROPERTIES INDEX

CA

10

The synthesis of an isomer of dioxosparteine. F. Šorm and B. Keil (Tech. Univ., Prague). *Collection Czechoslov. Chem. Communs.* 12, 655-60(1947)(in English).—The prepn. of a *dioxosparteine* (I) was attempted for structural studies. *Di-Me α,γ-di-2-pyridylglutarate* (II), prepd. from Me 2-pyridineacetate (III) by 2 methods, was isolated as the *dipicrate*, m. 194-5° (from dioxane). (a) III (11 g.) in 20 cc. C_6H_6 was added dropwise to 2.96 g. atomized K in 100 cc. C_6H_6 and after 18 hrs. 9.82 g. CH_3I was added with spontaneous reaction; when the alk. reaction had disappeared after 3 hrs. at 80°, the soln. was shaken with 25 cc. 3 N HCl at 0°, the aq. ext. made alk. with satd. aq. KOH, and the product which sepd. extd. with Et_2O, giving 3.8 g. (33%) II, b_5 214-20°, as well as 1.4 g. of a fraction b_5 270°. (b) Dry $(CH_2O)_3$ (0.66 g.), 50 mg. piperidine, and 6.6 g. III were heated to 120° 5 min.; distn. gave 1.65 g. III, b_{16} 120°, and 4.4 g. (84.5%) II, b_5 200-10°. On hydrogenation 7.8 g. II in 160 cc. HOAc and 0.78 g. PtO_2 (Adams) at room temp. and 140 mm. took up 3335 cc. H (3230 theory) and gave 0.8 g. of a fraction b_{15} 98-100°, and 3.4 g. $b_{0.05}$ 175°. The latter in 10 cc. C_6H_6 was analyzed chromatographically on 75 g. neutral Al_2O_3. The following fractions were obtained (no. of fraction, cc. of developer, and mg. of residue given): 1, 15 cc. C_6H_6, 675; 2, 15 cc. C_6H_6, 480; 3, 15 cc. C_6H_6, 280; 4, 30 cc. C_6H_6, 250; 5, 30 cc. C_6H_6, 140; 6, 30 cc. C_6H_6, 225; 7, 40 cc. C_6H_6, 115; 8, 40 cc. C_6H_6, 80; 9, 40 cc. C_6H_6, 75; 10, 40 cc. C_6H_6, 70; 11, 40 cc. C_6H_6, 50; 12, 40 cc. $CHCl_3$, 275; 13, 80 cc. $CHCl_3$, 600; 14, 40 cc. $CHCl_3$, 25. Fractions 2-6 were colorless gums, crystg. on wetting with Et_2O. Fractions 7-11 were fluorescent noncryst. gums. Fractions 12-14 were dark gums, crystg. on standing after wetting with C_6H_6. Fraction 1, a dark-colored gum, was reanalyzed on 18 g. Al_2O_3; the C_6H_6 eluate gave a dark gum with a basic odor. The $CHCl_3$ eluate was combined with fractions 2-6, the crystals produced, recrystd. from Et_2O, sublimed at 0.001 mm., and recrystd. twice from Et_2O, m. 17°, analyzed as I. The mother liquor from I, on Al_2O_3, gave a product m. 136-7° from the C_6H_6 eluate and fractions 13-14 gave a compd. m. 160-1° (from Et_2O), both of unknown structure. John W. Green

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SHORM, F.

F-2

USSR/ Microbiology-Antibiosis and Symbiosis. Antibiotics

Abs Jour: Ref Zhur - Biol., No 6, 1958, 24135

Author : Gryunberger, D., Shormova, Z., Shorm, F.
Inst : Not given
Title : Effect of Albomycin on Oxidation Processes and Metabolism of Nucleic Acids in Staphylococcus Aureus and in Escherichia Coli.

Orig Pub: Biokhimya, 1947, 22, No 1-2, 2, 148-153

Abstract: Albomycin (I) in greater than bacteriostatic concentrations (10 γ/ml) does not inhibit endogenous respiration and oxidation of glucose, acetic, succinic and glutamic acids either in dormant or growing bacterial cells of Escherichia coli and Staphylococcus aureus. Exposure of growing cells of S. aureus in the period of logarithmic phase to

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Polarographic reduction of heterocyclic compounds II

F. Šorm and Z. Šormová. *Chem. Listy* 42, 82-7(1948).

In a study of systems similar to one of the components of codehydrase, the following compds. were subjected to polarographic reduction: *Pyridine-MeBr, trigonelline, nicotinamide-MeBr, isonicotinamide-MeBr, 1-tetraacetylglucosido-3-carbamylpyridinium bromide, and cozymase.* The varying behavior of the compds. is related to their structures. Where 2 waves are found, the 1st is assocd. with 1-electron reduction to a semiquinonoid compd., the 2nd to the reduction to a dihydropyridine deriv. M. Hudlický

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CA

Terpenes. XII. Composition of the oil of hops. F. Šorm, J. Mleziva, and Z. Arnold (Tech. Univ., Prague). *Collection Czechoslov. Chem. Communs.* 14, 693-8(1949) (in English); cf. *C.A.* 44, 935e, 5848c.—Oil of hops is examd. to define the sesquiterpene fraction, which is separable as pure components by a chromatographic method. Lupurone (I) is identified as Me nonyl ketone. The previously reported isononanecarboxylic acid is identified as pelargonic acid (II). II is present as esters of nonidentified alcs. A $C_{15}H_{26}O$ ketone is present in small amount in the higher-boiling fractions. Two cryst. triterpenes, $C_{30}H_{50}$ (III), m. 34° (octahydro deriv., m. 37°), and a product (IV), m. 60°, α_D^{20} 17°, mol. wt. 412, are also present. It is concluded that the principal constituents of the Bohemian oil are myrcene, pelargonic esters, $MeCOC_6H_{11}$, and the triterpenes III and IV. **XIII. Sesquiterpenes from the essential oil of hops.** F. Šorm, J. Mleziva, Z. Arnold, and J. Pliva. *Ibid.* 699-715.—The previously reported identity of humulene and α-caryophyllene is studied. The $C_{15}H_{24}$ sesquiterpenic fraction of the oil is sepd. chromatographically as the 3 components: natural farnasene (I), acyclic with 4 double bonds, 2 of which are conjugated; humulene (II), monocyclic with 3 double bonds; and a β-caryophyllene type (III), bicyclic with 1 double bond. The constitution of I proposed is 2,6-dimethyl-10-methylene-2,8,11-dodecatriene. **XIV. The identity of humulene and α-caryophyllene.** V. Herout, M. Streible, J. Mleziva, and F. Šorm. *Ibid.* 716-22.—α-Caryophyllene (I) obtained from oil of cloves was isolated as a pure compd., b_{10} 126°, d_4^{20} 0.8966, n_D^{20} 1.5023, α_D^{20} 1.0 ± 0.3° ($CHCl_3$, c 9.26). Hexahydro deriv. of I, b_{11} 118°, d_4^{20} 0.8584, n_D^{20} 1.4715, α_D^{20} −0.8 ± 0.3° ($CHCl_3$, c 9.32); I nitrosite, m. 119°. I trioxide (from I and BaO_2H), m. 121°. The infrared spectra of I and its hexahydro deriv. are identical with those of humulene (II) of oil of hops and hexahydrohumulene (III). It is proposed that the name caryophyllene, which indicates bicyclic hydrocarbons, be replaced by "humulene" which is monocyclic. **XV. Constitution of acorone and isoacorone.** I. F. Šorm and V. Herout. *Ibid.* 723-46.—Acorone (I), $C_{15}H_{22}O_2$, and isoacorone (II), the sesquiterpenic diketones from oil of sweet flag, exist in enolization equil. and are separable chromatographically. I with Pt-H yields acorolone (III), $C_{15}H_{22}O_2$, a keto alc. (p-nitrobenzoate, m. 133°; semicarbazone, amorphous). I with o-$HO_2CC_6H_4CO_2H$ yields acoronolide (IV), $C_{15}H_{20}O_2$, m. 188°, crystg. as the lactone. The lactone from II, m. 127°. I and II do not react with $KMnO_4$. I disemicarbazone, m. 211° (decompn.), regenerates a mixt. of I and II when hydrolyzed with $(CO_2H)_2$. Zn-Hg reduces I to a mixt. ($C_{15}H_{24}$ and $C_{15}H_{26}$) (V), and PtO_2-H reduces V to acorane (VI), b_{11-6} 124-6°. Pd-C dehydrogenates V at 310° to cadalene (VII). $LiAlH_4$ in Et_2O converts I to acordiol (VIII), amorphous, which is dehydrated with o-$C_6H_4(CO)_2O$, to $C_{15}H_{24}$ (IX), b_{11} 117-21°, and has 2 double bonds. IX with PtO_2-H yields VI and Pd-C dehydrogenates IX to VII. The cadalene skeleton probably is obtained by rearrangement. I on NaOH fusion at 225° yields piperitone and a doubly-unsatd. acid, $C_{15}H_{26}O_2$ (X) (benzylthiuronium salt, m. 120°; Me ester, b_{1-6}

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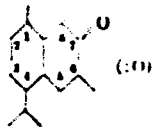
130°). X with PtO_2-H yields a tetrahydro deriv., b_5 150-2°. I with MeMgI yields methylacorolone (XI), m. 130°, which forms with $LiAlH_4$ methylacorolol (XII), m. 119°. XII dehydrates to a doubly unsatd. $C_{16}H_{28}$ (XIII), b_5 132°. XIII with Pd-C dehydrogenates to 7-methylcadalene, m. 39.5°, and minor amts. of azulene. I appears to show an anomalous CH_2 reaction because an Ar grouping is not proved for I, and I dioxime subjected to a Beckmann rearrangement does not form volatile acids or amines. The data indicate for I the formula Ia, where the



(Ia)

5-position is favored for the 2nd CO group. I with BzH forms monobenzylideneacorone, $C_{21}H_{24}O_3$, m. 185-6°. The results indicate position 7 for the reactive carbonyl while the 2nd carbonyl, probably in position 5, is sterically hindered. The failure of the characteristic $FeCl_3$ test for a β-diketone and ultraviolet spectra exclude α- and β-diketone structures. The differences in the infrared spectra of acorane and tetrahydrocadinene suggest that I and II do not have the cadalene skeleton but form cadalene by rearrangement during dehydrogenation. N. T. P.

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SORM, E.

Terpenes. XII Composition of the oil of hops. F. Sorm, J. Mleziva, and Z. Arnold (Tech. Univ., Prague). Collect. Czechoslov. Chem. Communs. 14, 693-8(1949) (in English); cf. C.A. 44, 935e, 5848c.—Oil of hops is examd. to define the sesquiterpene fraction, which is separable as pure components by a chromatographic method. Luparone (I) is identified as Me nonyl ketone. The previously reported isononanecarboxylic acid is identified as pelargonic acid (II). II is present as esters of nonidentified alcs. A $C_{13}H_{18}O$ ketone is present in small amount in the higher-boiling fractions. Two cryst. triterpenes, $C_{30}H_{50}$ (III), m. 34° (octahydro deriv., m. 37°), and a product (IV), m. 60°, α_D^{20} 17°, mol. wt. 412, are also present. It is concluded that the principal constituents of the Bohemian oil are myrcene, pelargonic esters, $MeCOC_8H_{19}$, and the triterpenes III and IV. XIII. Sesquiterpenes from the essential oil of hops. F. Sorm, J. Mleziva, Z. Arnold, and J. Pliva. *Ibid.* 699-715.—The previously reported identity of humulene and α-caryophyllene is studied. The $C_{15}H_{24}$ sesquiterpenic fraction of the oil is sepd. chromatographically as the 3 components: natural farnasene (I), acyclic with 4 double bonds, 2 of which are conjugated; humulene (II), monocyclic with 3 double bonds; and a β-caryophyllene type (III), bicyclic with 1 double bond. The constitution of I proposed is 2,6-dimethyl-10-methylene-2,6,11-dodecatriene. XIV. The identity of humulene and α-caryophyllene. V. Herout, M. Streible, J. Mleziva, and F. Sorm. *Ibid.* 716-22.—α-Caryophyllene (I) obtained from oil of cloves was isolated as a pure compd., b_{10} 126°, d_4^{20} 0.8960, n_D^{20} 1.5023, α_D^{20} 1.0 ± 0.3° ($CHCl_3$, c 9.26). Hexahydro deriv. of I, b_{10} 118°, d_4^{20} 0.8584, n_D^{20} 1.4715, α_D^{20} −0.8 ± 0.3° ($CHCl_3$; c 9.32); I nitrosite, m. 119°. I trioxide (from I and BzO_2H), m. 121°. The infrared spectra of I and its hexahydro deriv. are identical with those of humulene (II) of oil of hops and hexahydrohumulene (III). It is proposed that the name caryophyllene, which indicates bicyclic hydrocarbons, be replaced by "humulene" which is monocyclic. XV. Constitution of acorone and isoacorone. 1. F. Sorm and V. Herout. *Ibid.* 723-40.—Acorone (I), $C_{15}H_{16}O_2$, and isoacorone (II), the sesquiterpenic diketones from oil of sweet flag, exist in enolization equil. and are separable chromatographically. I with Pt-H yields acorolone (III), $C_{15}H_{18}O_2$, a keto alc. (p-nitrobenzoate, m. 133°; semicarbazone, amorphous). I with o-$HO_2CC_6H_4CO_2H$ yields acoronolide (IV), $C_{15}H_{14}O_2$, m. 188°, crystg. as the lactone. The lactone from II, m. 137°. I and II do not react with $KMnO_4$. I disemicarbazone, m. 211° (decompn.), regenerates a mixt. of I and II when hydrolyzed with $(CO_2H)_2$. Zn-Hg reduces I to a mixt. ($C_{15}H_{18}$ and $C_{15}H_{20}$) (V), and PtO_2-H reduces V to acorane (VI), b_{10-4} 124-6°. Pd-C dehydrogenates V at 310° to cadalene (VII). $LiAlH_4$ in Et_2O converts I to acordiol (VIII), amorphous, which is dehydrated with o-$C_6H_4(CO)_2O$, to $C_{15}H_{16}$ (IX), b_{11} 117-21°, and has 2 double bonds. IX with PtO_2-H yields VI and Pd-C dehydrogenates IX to VII. The cadalene skeleton probably is obtained by rearrangement. I on NaOH fusion at 225° yields piperitone and a doubly-unsatd. acid, $C_{15}H_{26}O_2$ (X) (benzylthiuronium salt, m. 120°; Me ester, $b_{0.1}$

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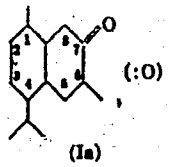
130°). X with PtO_2-H yields a tetrahydro deriv., b_4 150–2°. I with MeMgI yields methylacorolone (XI), m. 139°, which forms with $LiAlH_4$ methylacordiol (XII), m. 119°. XII dehydrates to a doubly unsatd. $C_{15}H_{26}$ (XIII), b_4 132°. XIII with Pd-C dehydrogenates to 7-methylcadalene, m. 39.5°, and minor amts. of azulene. I appears to show an anomalous CHI_3 reaction because an Ac grouping is not proved for I, and I dioxime subjected to a Beckmann rearrangement does not form volatile acids or amines. The data indicate for I the formula Ia, where the



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5-position is favored for the 2nd CO group. I with BzH forms monobenzylideneacorone, $C_{22}H_{18}O_3$, m. 185–6°. The results indicate position 7 for the reactive carbonyl while the 2nd carbonyl, probably in position 5, is sterically hindered. The failure of the characteristic $FeCl_3$ test for a β-diketone and ultraviolet spectra exclude α- and β-diketone structures. The differences in the infrared spectra of acorane and tetrahydrocadinene suggest that I and II do not have the cadalene skeleton but form cadalene by rearrangement during dehydrogenation. N. T. F.

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α 7

Neutral components of cork wax. F. Šorm and V. Bažant (Tech. Univ., Prague). *Collection Czechoslav. Chem. Communs.* 15, 73-81(1950)(in English).—The neutral components of cork wax were reinvestigated. Cork prepd. from the bark of *Quercus suber* averages 20% neutral components by cold extn. with EtOH-C_6H_6. Chromatographic sepn. produces a mixt. of friedelin, cerin, and $C_{31}H_{60}O$ (I), paraffinic alcs., I acetates m. 54-6°, benzoates m. 48-50°, *p*-nitrobenzoates m. 150-162°. I is probably a mixt. of C_{29} to C_{34} compds. CrO_3-AcOH oxidizes I to $C_{31}H_{60}O_2$ (II) acid m. 75°. A tricyclic $C_{30}H_{48}O$ (III) satd. alc. and a $C_{40}H_{62}O_2$ (IV), triterpene dialc. and a $C_{30}H_{48}O_3$ (V) triterpene hydroxy ketone were found in succeeding fractions. A diterpene fraction which may be $C_{20}H_{34}O$ or $C_{20}H_{32}O_2$ was isolated which m. 290-2° and had an approx. mol. wt. of 347. N. T. Farmacci

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Some aminoalkyl derivatives of benzimidazole. F. Šorm and J. Urban (Tech. Univ. Prague). *Collection Czechoslov. Chem. Communs.* 15, 109-20(1950) (in English); cf. *C.A.* 24, 1838. 2-(2-Aminoethyl)benzimidazole (I) is prepd. in 3 ways. o-$C_6H_4(NH_2)_2$ (II) heated 1.5 hrs. at 145° with double its wt. of $BzNHCH_2CH_2CO_2H$ gives 75% 2-(2-*benzamidoethyl)benzimidazole* (III), converted by EtOH-HCl to the *mono-HCl salt*, m. 229-30°. III boiled 3 hrs. with 15% HCl gives 67% I·2HCl, softens at 280°, m. 328°. A soln. of 4.5 g. II and 1.9 g. β-alanine in 40 cc. 15% HCl is evapd. and the residue heated 2 hrs. at 160° and extd. with MeOH, giving 35% I·2HCl, converted by NH_4OH-$CHCl_3$ to I, m. 166°. I rapidly absorbs CO_2 from the air. Et 2-benzimidazolepropionate heated with $N_2H_4.H_2O$ in EtOH gives 87% of the *hydrazide*, decomp. 250° (from MeOH); this with iso-$AmNO_2$ in EtOH and HCl, followed by refluxing, gives 63% 2-[2-(*carbethoxyamino*)*ethyl*]*benzimidazole-HCl*, decomp. 235-7°, which, refluxed 7 hrs. with concd. HCl, yields 93% I·2HCl. 2-Phenylbenzimidazole (IV) (9 g.) in 150 cc. hot dioxane treated with 7.5 g. 2-(1-piperidyl)ethyl chloride and 3 g. $NaNH_2$ and the mixt. refluxed 6 hrs. gives, after filtration and solvent removal, 12.4 g. of a viscous oil, purified by crystn. and distn. to yield 1-[2-(1-*piperidyl*)*ethyl*]-2-*phenylbenzimidazole* (V), m. 64-7°; *picrate*, m. 131°; *HCl salt*, m. 229-31°; *succinate*, V·$C_4H_6O_4$, m. 129-1°. In the same way, 1.5 g. IV, 2.9 g. $Me_2NCH_2CH_2Cl$, and 1.5 g. $NaNH_2$ give 4.3 g. crude product that after sublimation yields crystals of 1-[2-*dimethylaminoethyl*]-2-*phenylbenzimidazole*, m. 79-80.5° (forms a carbonate in air); *picrate*, m. 193-4°; *succinate*, m. 135°. In the same way 4.2 g. 2-(*p*-methoxyphenyl)benzimidazole, 3 g. 2-(1-piperidyl)ethyl chloride, and 1.2 g. $NaNH_2$ give 1-[2-(1-*piperidyl*)*ethyl*]-2-(*p*-*methoxyphenyl*)*benzimidazole*, m. 104° (forms a carbonate in air); *HCl salt*, m. 248°.

David Taub

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11 B

Proteins and amino acids. VI. A synthesis of proline and hygric acid. F. Šorm and J. Smrt (Central Chem. Research Inst., Prague). *Collection Czech Chem. Commun.* 16, 42-6(1951); cf. C.A. 45, 9482c.—Tetrahydrofuran was converted into 4-acetoxy-1-bromobutane with AcBr thence to 1-bromo-4-chlorovaleric acid (I) through 4-acetoxyvaleronitrile and 4-chlorovaleric acid. I was cyclized with 40% aq. NH_3 at 90° to DL-proline in a 30% yield and isolated through the Cu salt, m. 195-8°, DL-proline rhodanilate, m. 133.1° decompn. DL-Hygric acid was obtained from I with 40% $MeNH_2$, purified by sublimation at 140° at 1 mm. and recrystn. from $CHCl_3$, m. 169-70°. Et DL-hygrate b. 83.4° was not resolved with *d*-bromocamphorsulfonic acid.

W. M. Potts

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PROCESSES AND PROPERTIES

The preparation of trinitrophloroglucinol. *Fr. Šorm* and C. Z. Drápalová. *Chem. Obzor* 12, 153-6(1937). Ten g. of 1,3,5-trichloro-2,4,6-trinitrobenzene (I) and 15 g. of NaOH in 500 cc. of 85-90% EtOH were boiled for 1 hr. until flakes of Na trinitrophloroglucinolate (II) formed in the soln. They were collected on a filter paper, washed with 50% EtOH and with concd. EtOH, and were dried at 100°. The original filtrate was treated with 5 cc. of H_2O contg. 5 g. of NaOH and with 10 g. of I. A repetition of the procedure improves the yield of II. The total yield of II was 11 g. (55% of the theoretical yield). Beginning with 1,3,5-trinitro-2,4,6-triaminobenzene and boiling it in NaOH soln. the authors prepd. II in 70% yield. They prepd. and describe the Na, K, NH_4, Li, Ca, Ba, Sr, Cd, Pd and Ag salts of II. Only the Pb and the Ag salts had properties of interest to makers of *explosives*. Frank Maresh

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

CA

The preparation of tetraazido-1,4-benzoquinone. Frantisek Sorm. *Chem. Obsor* 14, 37-40(1939). Tetrachloranil (1.9 g.), ground finely, screened through 1 mm. mesh, and suspended in 80 cc. EtOH, was mixed with 5.8 g. NaN_3 for 8 hrs. in a rotating vessel. The yellow chloranil became converted into the red chloroazidobenzoquinone which formed black-blue lustrous crystals of tetraazidobenzoquinone (I), forming a red violet soln. in EtOH, Et_2O and Et_2CO, a blue soln. in $CHCl_3$ and toluene, and insol. in H_2O. Because the oxidation of I in soln. was faster than the titration, it was not possible to titrate I iodometrically. In air I decompd., the crystals lost their luster, disintegrated, and left a yellow-green powder; the decompn. progressed as a linear function of the time, evolving elementary N (38% of the N in the mol. in 90 days). I in acetone mixed with aq. KI acidified with dil. HCl, and dild. with water yielded a white ppt. of tetraazidohydroquinone (II). During the reaction it was necessary to add acetone to the mixt. and to remove the ppt. I with a satd. Na_2SO_3 soln. The II, washed in EtOH and dried in a stream of CO_2, was sol. in acetone, partly sol. in EtOH, but insol. in H_2O, in the air, particularly if moist, II oxidized to the blue quinone. In a flame I exploded violently, even in small quantities, whereas II merely ignited; the acceleration of the disruption is ascribed to the quinoid structure of the C_6H_6 nucleus. Although I had good detonating properties which it did not lose at high pressures (1000 kg./sq. cm.) it exploded at 91° and showed a sensitivity of 20 cm. in a 0.5 kg. Kast hammer; the gradual disintegration prevents its technical application, and among explosives I remains only of theoretical interest.

Frank Marsh

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

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16

Šorm, František: Technologie lučebnin organických. Prague: Chem. výroby. 1947. 277 pp. Kčs. 188. Reviewed in *Chem. Obzor* 5, 97(1948).

COMMON ELEMENTS

MATERIALS INDEX

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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Synthesis of homohygrinic acid. F. Šorm (Soc. Chem. Met. Production, Prague-Vysocany). *Coll. Czech. Chem. Commun.* 12, 375-80(1947).—A new synthesis of homohygrinic acid (I), $MeN.CH_2.CH_2.CH_2.CHCH_2CO_2H$, gives a product m. 124° differing from the I (m. 91°) isolated by Hess (cf. H. and Flak, *C.A.* 14, 3249) from the oxidation of the alkaloid cuscohygrine. RCO_2H (R = tetrahydrofurfurylmethyl; prepd. by the steps ROH → RBr → RCN → RCO_2H) (11.5 g.), added to an ice-cooled mixt. of 90 ml. 48% aq. HBr and 450 ml. Ac_2O, heated 6 hrs. under pressure to 100°, the volatile matter distd. off, and the residue taken up in ether, washed, and dried, yielded 24.2 g. of an oil, β,ε-dibromocaproic acid (II); amide m. 72° (from C_6H_6). II (56 g.) and 240 ml. 20% $MeNH_2$ in MeOH were heated in 5 sealed tubes 6 hrs. at 110-30°, the volatile matter distd. off, the residue dissolved in 1 l. H_2O, and 240 g. $Ba(OH)_2$ added. After standing 48 hrs., carbonation, acidification with H_2SO_4, filtration, and evapn. gave crude I, which did not crystallize. Distn. followed by treatment with HCl in abs. alc. gave 16.6 g. of the Et ester (III), b_{18} 97-9°, a sweetish-smelling oil; picrate, yellow needles from alc., m. 112°. Hydrolysis of III by $Ba(OH)_2$ gave I (isolated as before) which rapidly crystd. in a desiccator, m. 124° (from C_6H_6); the *N,N*-dimethylamide (IV) b_{18} 137-40° (picrate, needles, m. 147° (from alc.)).

Richard G. Kadesch

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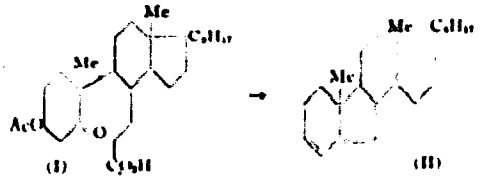
PROCESSES AND PROPERTIES INDEX

CA

Oxidation of cholesterol acetate. F. Sorm. *Collection Czechoslov. Chem. Communs.* 12, 430-9(1947).—In the oxidation of cholesterol acetate by CrO_3 in AcOH as recommended by Windaus and Resau (C.A. 9, 2246), S added to the mother liquor from which the 7-keto-cholesterol had been pptd. equal quantities by vol. of MeOH and water. After standing several days at 0°, crystals of the keto acid acetate (I), m. 130°, appeared on the surface of the soln. When filtered, washed with 70% AcOH, and distd. at 0.5 mm. pressure, I gave a yellow oil which crystd. when triturated in EtOH to form a pure hydrocarbon (II), m. 70°.



(I) (II)

W. D. Lesch

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A new preparation and reduction of 3-(2-furyl)propylamine. F. Sorm and J. Brandejs. *Collection Czechoslov. Chem. Commun.* 12, 444-54(1947).—To 200 g. β-2-furyl-α-cyanoacrylic acid suspended in 2000 cc. water was added in 3 portions 2800 g. of 2.5% Na-Hg, the temp. being kept at 25° and CO_2 passed in during the reaction. At the end of the reduction (5-6 hrs.) the soln. was made slightly acid to tropeolin, the oily substance extd. with Et_2O, the ext. washed with water, dried over Na_2SO_4, the solvent evapd., and the β-3-furyl-α-cyanopropionic acid (I) dried in a vacuum desiccator over P_2O_5; after purification, I b_{11} 103-4°. I (50 g.) in 1000 cc. abs. BuOH, reduced by direct addn. of 80 g. Na and neutralized, gave 3-(2-furyl)propylamine, b_{10} 90.5°, 15 g. of which with 1 g Pt catalyst and H under 50 mm. pressure 9 hrs. at 20° yielded 2.6 g. 2-propylpyrrolidine (II) and 6.9 g. 3-(tetrahydro-2-furyl)propylamine. Cyclization of II to pyrrolizidine (1-azabicyclo[3.3.0]octane) was readily accomplished; picrate m. 286° (decompn.). W. D. Leech

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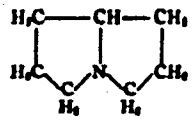
A new synthesis of pyrrolizidine (1-azabicyclo[3.3.0]-octane). *F. Šorm and Z. Arnold. Collection Czechoslov. Chem. Commun.* 12, 467–71(1947).—To 100 g. of 48% HBr was added dropwise at 0° 320 cc. Ac_2O, then 6 g. 3-(tetrahydro-2-furyl)propylamine, the mixt. heated on a water bath 6 hrs., the acids removed by vacuum distn., and the solid residue recrystd. from AcOEt, giving



(I)

4,7-dibromo-1-aminoheptane-HBr, m. 117°; this was condensed directly to the 2-ring compd. by heating in NaOH soln. at 40° C. 2 hrs., from which the pyrrolizidine (I), b. 146° (picrate, m. 258°), was isolated. I was also prepd. by catalytic dehydration of 3-(2-furyl)-propylamine over Al_2O_3 at 400° to the trimethylenepyrrole, which was transformed into I by catalytic reduction with Pt in anhyd. AcOH. W. D. Leech

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SORM, F.

Sesquiterpenes. III. Synthesis of 4,6-dimethylazulene. F. Sorm, Z. Sormová, and L. Sedivý. *Collection Czechoslov. Chem. Communs.* 12, 651-61(1947). Et 2-oxocyclopentanecarboxylate heated 2 hrs. in the presence of Na in PhMe with $MeCHBrCO_2Et$ gave, on distn., 85% Et 1-(1-carbethoxyethyl)-2-oxocyclopentanecarboxylate (I), b. 140°. I heated with concd. HCl 12 hrs. yielded 52% α-methyl-2-oxocyclopentaneacetic acid (II), b_{10} 151°; semicarbazone, m. 188°; Et ester (III), from II in abs. EtOH satd. with gaseous HCl, $b_{0.5}$ 81-3°. In the presence of K, abs. EtOH, and $NCCH_2CO_2Et$, III yielded 35% Et 2-(1-carbethoxyethyl)-α-cyano-$\Delta^{1,2}$-cyclopentaneacetate (IV), $b_{0.7}$ 150-60°, reduced by hydrogenation in EtOH in the presence of PtO_2 to 82% Et 2-(1-carbethoxyethyl)-α-cyanocyclopentaneacetate, $b_{0.75}$ 151°. When 3 g. IV was boiled 10 hrs. with 30 cc. concd. HCl, there appeared on the reaction surface an oil which was sepd. by steam distn., giving a total of 0.5 g. 2-methylbicyclo[3.3.0]octan-3-one (V); semicarbazone m. 204°. The aq. layer yielded *cis*-α-methyl-1,2-cyclopentanediacetic acid (Va), m. 189°. From Et 2-(carbethoxymethyl)-α-cyanocyclopentaneacetate, Na, C_6H_6, and MeI was obtained 81% Et 2-(carbethoxymethyl)-α-cyano-α-methylcyclopentaneacetate (VI), $b_{0.4}$ 157-9°, 49 g. of which heated with 500 ml. concd. HCl 20 hrs. gave, on cooling, 18 g. pure *cis*-acid (Va), m. 181°; from the mother liquors was obtained 2 g. *trans*-acid (Vb), m. 150°. Va and $SOCl_2$ gave the acid chloride, converted by CH_2N_2 through the diamide into *cis*-β-methyl-1,2-cyclopentanedipropionic acid (VII), m. 153°. From VII, reduced Fe powder, and $Ba(OH)_2$ was distd. 83% 2-methylbicyclo[5.3.0]decan-4-one (VIII), b_{12} 128°; semicarbazone m. 207-8°. Hydrolysis of the reaction product of VIII and MeMgI yielded 94% *cis*-2,4-dimethylbicyclo[5.3.0]decan-4-ol, b_{14} 135-6°, dehydrated over $KHSO_4$ to 88% *cis*-2,4-dimethylbicyclo[5.3.0]-3(or 4)-decene, b_{14} 108.5°; dehydrogenation of the latter over 10% Pd charcoal at 340-60° yielded crude 4,6-dimethylazulene (IX), which could not be crystd.; with trinitrobenzene, dark needles (X), m. 143°, were obtained. IX, liberated from X chromatographically in pentane soln., was light purple in color. M. Q. Webb

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PROCESSES AND PROPERTIES INDEX

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The effect of the Reformatskii reagent on *N*-methyl imides of dicarboxylic acids. II. Effect of organometallic reagents on the amido group. 13. R. Lukeš and F. Sorm (United Chem. Met. Manufrs., Prague-Vysočany). *Collection Czechoslov. Chem. Communs.* 12, 637–40(1947)(in French); cf. *C.A.* 34, 7868⁸.—*N-Methylglutarimide* (I) (63 g.), 165 g. $BrCH_2CO_2Et$ (II), and 150 cc. C_6H_6 were heated with a few Zn turnings in an oil bath at 100–10°; after an initial violent reaction 80 g. Zn was added over 2 hrs. and heating continued 10 hrs. Addn. of dil. HOAc, extn. with C_6H_6, and distn. of the combined C_6H_6 exts. gave 20 g. unconverted I, b_{11} 122°, and 6 g. *Et 1-methyl-2-oxo-1,2,3,4-tetrahydro-5-pyridineacetate*, b_{11} 165°, crystd. in contact with H_2O, m. 62°. Similarly *Et 4-methyl-3-oxo-3,3-dihydro-1,4,4H-oxazine-5-acetate* (or *Et 4-methyl-3-oxo-3,4-dihydro-1,4,2H-oxazine-5-acetate*), obtained in 6-g. yield from 60 g. *N-methyldiglycolimide* (III) (m. 76°), 150 cc. C_6H_6, 165 g. II, and 80 g. Zn, b_9 161°; 20 g. unreacted III was obtained, b_9 110–30°. *Et 2-methyl-1-oxo-3-hydroxy-3-isoindolineacetate* (IV), prepd. in 15-g. yield by treating 40 g. *N-methylphthalimide* with 150 cc. C_6H_6 and 85 g. II at 110°, adding 40 g. Zn, then heating at 120° 5 hrs., m. 106° (3 recrystns. from EtOH). IV is stable; it can be heated to the b.p. without decompn. *N-Methylhomophthalimide* reacted similarly as above, and a high-boiling fraction was obtained but no chem. compd. The various *N*-methyl imides were prepd. by distn. of the dicarboxylic acids with $MeNH_2$ at 700 mm. and crystn. from C_6H_6 or C_6H_6-ligroin. Low yields of ester products may be attributed to appreciable H_2O soly. J. W. G.

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SORM, F.

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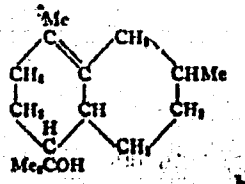
Terpenes. V. The terpenic constituents of the essential oil of sweetflag (Acorus calamus L.). F. Šorm and V. Herout. *Collection Czechoslov. Chem. Commun.* 13, 177-208(1948); cf. *C.A.* 42, 7283*b*.—Oil of Dutch origin was subjected to fractionation after sepn. of acidic and phenolic substances. The lower-boiling fraction, b_{4} 42-70°, contained terpenes which polymerized upon standing and were not further exaind. *d*-Camphor was isolated as was a terpenic alc., $C_{10}H_{16}O$ (semicarbazone m. 133°), and an alc. ($C_{15}H_{25}O$) fraction which was unsatd. (2 double bond/mol.). From these substances arose the characteristic odor of this essential oil. Calamene, $C_{15}H_{24}$, d_{20} 0.9226, n_D^{20} 1.5040, was found to be a mixture of a bicyclic hydrocarbon (2 double bonds) and a tricyclic hydrocarbon (1 double dond). A fraction ($C_{15}H_{24}O$), probably possessing 2 double bonds and a carbonylic O and named acoroxide, was easily hydrogenated to $C_{15}H_{22}O$, which contained no active H and did not form a semicarbazone or react with PrMgBr. A ketone, calamone, $C_{15}H_{24}O$, b_{14} 96-9°, was converted to the semicarbazone, m. 185-7°. There were also isolated 2 isomeric diketones, $C_{15}H_{22}O_2$, acorone, m. 100-1°, and isoacorone, m. 90-7°, and a substance, $C_{15}H_{26}O_2$, m. 168°, called calamone. VI. Constitution of carotol II. F. Šorm and L. Urbanek. *Ibid.* 420-7.—A series of reactions was carried out on carotol which indicated that its structure is



M. O. Webb

COPPER VARIABLES INDEX

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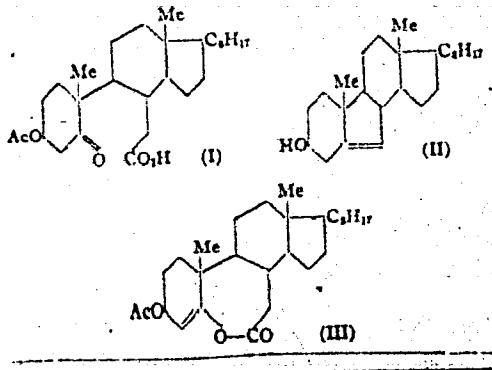
SORM, F.

PROCESSES AND PROPERTIES INDEX

β-Norcholesterol. F. Sorm and H. Dykova. *Collection Czechoslov. Chem. Communs.* 13, 407–19(1948) (in English).—The principal reaction product (I) from the Cr_2O_3-oxidation of cholesterol acetate (*Collection Czechoslov. Chem. Communs.* 12, 437(1947)), was used for the prepn. of *β-norcholesterol* (II), an analog of cholesterol with a 5-membered B ring. A white needlelike enol lactone (III) with a 7-membered ring, m. 122° (from MeOH), $[\alpha]^{20}_{D}$ 60° (*c* 2, $CHCl_3$), was obtained in either 1-g. yield (52%)



after refluxing 2 g. I in 30 cc. Ac_2O on a water bath 1 hr., removing Ac_2O, sepg. the noncryst. residue on Al_2O_3 by chromatography, and recrystg. the petr. ether eluate from MeOH, or in 6-g. yield (63.4%) by treating 10 g. I in 20 cc. dry pyridine with 8.8 g. BzCl at room temp. 72 hrs. and purifying the Et_2O ext. of the reaction mixt. III (4 g.) heated in a test tube on an oil bath 30 min. at 180–200° evolved CO_2 and formed 91.4% *β-norcholesterol acetate* (IV), m. 78° (from Me_2CO), $[\alpha]^{20}_{D}$ −89° (*c* 2, $CHCl_3$). II, fine white needles from abs. MeOH, EtOH, or petr. ether or a voluminous powder from aq. EtOH, m. 114°, $[\alpha]^{20}_{D}$ −90°, was obtained in 96.3% yield by refluxing 3.00 g. IV in 800 cc. boiling MeOH with a satd. aq. soln. of KOH (5 g.) on a water bath 2 hrs. and purifying the product by removing the MeOH, taking up the residue in Et_2O, washing it until neutral, drying it with Na_2SO_4, distg. off the Et_2O, and recrystg. II was identified as its *benzoate* (V) (200 mg.), fine white crystals, m. 136° (from EtOH and Me_2CO), $[\alpha]^{20}_{D}$ −54° (*c* 4, $CHCl_3$), resulting from the reaction of 200 mg. of II in dry pyridine with BzCl at room temp. for 72 hrs., and as its *sulfurous acid ester* (VI), white crystals from petr. ether, m. 168°, $[\alpha]^{20}_{D}$ −52.8° (*c* 3.33, $CHCl_3$), resulting from the reaction of 500 mg. II with 5 times the theoretical amt. (775 mg.) of $SOCl_2$ at room temp. for 30 min., followed by removal of the excess $SOCl_2$ with H_2O and purification of the product. II (1 g.) in 10 cc. dry C_6H_6 and 7.5 cc. dry Me_2CO was con-

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SORM, F.

Terpenes. IV. Constitution of carotol. F. Sorm and L. Urbánek. *Collection Czechoslov. Chem. Communs.* 13, [illegible]. - Hydrogenation of the sesquiterpenic alc. carotol, $[\alpha]_D^{20}$ 6.9°, n_D^{20} 1.4997, d_4^{20} 0.9702, obtained from the oil of *Daucus carota*, gave dihydrocarotol (I), colorless oil after distn., b_{11} 131-3°. On the basis of the oxidation of carotol with $KMnO_4$ and other reactions, S. and U. suggest that carotol contains 1 double bond in the hydrogenated skeleton of 1,7-dimethyl-1-isopropyl-naphthalene. T. B. N.

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Reduction of pyridinecarboxylic acids. F. Sorm. *Collection Czechoslov. Chem. Commun.* 13, 57-73(1948). The reduction of the 3-pyridinemonocarboxylic acids was carried out by each of the following methods: catalytically, by Zn and AcOH, and electrolytically. By catalytic reduction picolinic acid, m. 262°, was obtained from picolinic acid. On catalytic reduction nicotinic acid produced nipecotinic acid and piperidine. With Zn and AcOH, picolinic acid produces 2-picoline and isonicotinic acid produces 4-picoline. Thomas H. Niven

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1ST AND 2ND ORDERS

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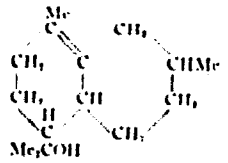

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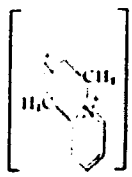
Preparation of pyridine carbinols and some of their reactions. F. Šorm and L. Šedivý. *Collection Czechoslov. Chem. Commun.* 13, 289-99(1948)(in English); (*Chem. Obsor* 20, 175 1945).—By reduction of picolinic and isonicotinic acids with Zn and AcOH 2-pyridinemethanol, b_{15} 112°, and 3-pyridinemethanol, b_{16} 154°, were prepd. 2-(Bromomethyl)pyridine-HBr (I) was prepd. by adding 63 ml. of 48% HBr drop by drop to 250 ml. ice-cooled Ac_2O with const. stirring, then 6 g. 2-pyridinemethanol added, the soln. heated in a glass autoclave 4 hrs. to 100° on a water bath, and the AcOH distd. off, together with HBr, crystn. from EtOH yielded I as practically colorless needles, m. 140°. I (20.5 g.) in a small amt. of H_2O was covered with 150 ml. benzene and mixed with 10 g. KOH in H_2O; the (bromomethyl)pyridine sepg. as an oil was taken up in the benzene, the benzene layer dried with anhyd. Na_2SO_4, and refluxed on a water bath for 100 hrs.; the bismethylenebispyridinium bromide (II) which sepd. during the heating crystd. from



(II)

aq. MeOH as almost colorless needles, m. 200° (decompn.), contg. 2 mols. H_2O of crystn. II hydrogenated with H and a PtO_2 catalyst produced the HBr salt of di-1-piperidylpiperazine, the base being liberated from a concd. aq. soln. of the salt with KOH. The oily base, taken up in CaH_2, dried over KOH, and distd., b_{20} 170°, the distillate crystg. at once and m. 81°. By refluxing 4-(bromomethyl)pyridine, a polymeric quaternary salt is obtained.

Thomas B. Niven

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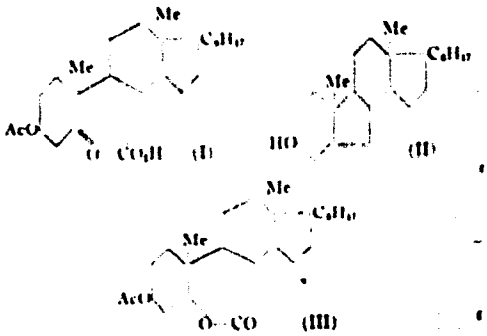

after refluxing 2 g. I in 30 cc. Ac_2O on a water bath 1 hr., removing Ac_2O, sepg. the noncryst. residue on Al_2O_3 by chromatography, and recrystg. the petr. ether eluate from MeOH, or in 6 g. yield (63.4%) by treating 10 g. I in 20 cc. dry pyridine with 8.8 g. BzCl at room temp. 72 hrs. and purifying the Et_2O ext. of the reaction mixt. III (4 g.) heated in a test tube on an oil bath 30 min. at 180-200° evolved CO_2 and formed 91.4% *β-norcholesterol acetate* (IV), m. 78° (from Me_2CO), [α]$^{20}_{D}$ −80° (c 2, $CHCl_3$). II, fine white needles from abs. MeOH, EtOH, or petr. ether or a voluminous powder from aq. EtOH, m. 114°, [α]$^{20}_{D}$ −90°, was obtained in 90.3% yield by refluxing 3.00 g. IV in 800 cc. boiling MeOH with a satd. aq. soln. of KOH (5 g.) on a water bath 2 hrs. and purifying the product by removing the MeOH, taking up the residue in Et_2O, washing it until neutral, drying it with Na_2SO_4, distg. off the Et_2O, and recrystg. II was identified as its *benzoate* (V) (200 mg.), fine white crystals, m. 136° (from EtOH and Me_2CO), [α]$^{20}_{D}$ −54° (c 4, $CHCl_3$), resulting from the reaction of 200 mg. of II in dry pyridine with BzCl at room temp. for 72 hrs., and as its *sulfurous acid ester* (VI), white crystals from petr. ether, m. 168°, [α]$^{20}_{D}$ −52.8° (c 3.33, $CHCl_3$), resulting from the reaction of 500 mg. II with 5 times the theoretical amt. (775 mg.) of $SOCl_2$ at room temp. for 30 min., followed by removal of the excess $SOCl_2$ with H_2O and purification of the product. II (1 g.) in 10 cc. dry C_6H_6 and 7.5 cc. dry Me_2CO was con-

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verted into β-norcholestenone (VII) by the oxidation method of Oppenauer by treating it with 500 mg. of $(Me_2CO)_3Al$ in 5 cc. dry C_6H_6 at 75-85° 6 hrs. VII was isolated as its semicarbazone, m. 251°. The ultraviolet absorption of VII showed it was α,β-unsatd. Expts. to definitely establish the structure of II included the mode of formation and the structure of IV. The inability to titrate III with NaOH; the absence of a CO_2H group in III as shown by potentiometric titration; a quant. recovery of the Me ester of I, m. 70°, from the reaction mixt. of 300 mg. of that substance and 300 mg. HzCl instead of recovery of III; and the failure of III to form an ester with CH_2N_2 all indicated that the CO and CO_2H groups of I were involved in the formation of III. The assumed end lactone structure of III seemed reasonable since its ultraviolet absorption spectrum approached that of CH_2CHOAc and not of CH_2CHCO_2H, even though its splitting off of CO_2 to form IV was unusual. Analysis of IV showed the AcO group in ring A was maintained; and the neg. rotation of IV, in agreement with the characteristic rotational changes in cholesteryl-type compds. as opposed to the pos. rotation of I and III, showed ring B was closed. Four lines of evidence are given to show the presence of only 1 double bond in IV: (1) absorption of 0.18 cc. H_2 (0.20 cc., theoretical) at 0°, 760 mm., to form dihydro-β-norcholesteryl acetate (VIII) from 106.5 mg. IV added to prehydrogenated catalyst (100 mg. PtO_2 in glacial HOAc); (2) formation of 83% (2 g.) β-norcholesteryl acetate oxide (IX) (from MeOH), m. 108°, $[\alpha]_D^{19}$ −34° (c 2, $CHCl_3$), by the reaction of 2.072 g. IV and 50 cc. 0.4 N (100% excess) perphthalic acid at room temp. for 72 hrs., followed by titration of the reaction mixt. with 90.4 cc. 0.1 N $Na_2S_2O_3$ (100 cc., theoretical); (3) absorption by IV of an amt. of Br_2 in Et_2O and glacial HOAc corresponding to 1 double bond, and (4) formation of the cryst. HCl addn. product of IV, m. 80° (mixed m.p. with IV, 66°), by satn. of 2 cc. $CHCl_3$ contg. 414 mg. IV with gaseous HCl at 0°.

H. L. Whidden

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The synthesis of sparteine and isosparteine. P. Šorm and B. Keil. *Collection Czechoslov. Chem. Communs.* 13, 544-56(1948)(in English).—The by-product in the prepn. of di-Me α,γ-di-2-pyridylglutarate (I) (*C.A.* 42, 5920e) was shown to be Me 4-oxo-3-(2-pyridyl)-1-pyridocolinecarboxylate (II) formed from I during distn. under reduced pressure by the simultaneous splitting off of MeOH and dehydrogenation. II, b_1 270-5°, m. 169° (from C_6H_6-petr. ether) [picrate, m. 239° (decompn.) (from dioxane)], was obtained from Me 2-pyridineacetate (III) in 13% yield with CH_2I_2 and 25.5% yield with CH_2O. III (0.42 g.), 0.385 g. $HC(OEt)_3$, and 0.5 cc. Ac_2O were heated 2 hrs. at 125-30°, the EtOAc and excess Ac_2O distd., and the residue distd. to give 2 fractions, b_1 160° and $b_{0.5}$ 220° (IV), which crystd. IV in C_6H_6 was chromatographed on 3 g. neutral Al_2O_3; the first 100 cc. of C_6H_6 eluate gave yellow needles of II, m. 169°. The identity of the II obtained by the 2 methods was shown by mixed m.p. and identical absorption curves in the visible spectrum. I (7.8 g.) in 100 cc. glacial AcOH and 0.78 g. Adams PtO_2 at room temp. and 140 mm. Hg excess pressure of H absorbed 3335 cc. H and was worked up to give 0.8 g., b_{15} 98-100°, and 3.4 g., $b_{0.05}$ 175° (V). V (7 g.) in thiophene-free C_6H_6 was passed through 210 g. Al_2O_3. The following fractions of 200 cc. were collected and evapd. separately (fraction no., eluent, wt. in g.): 1, C_6H_6, 0.32; 2-12, C_6H_6, 3.05; 13-20, C_6H_6-$CHCl_3$, 0.68; 21-5, C_6H_6-$CHCl_3$, 0.87; 26-7, Et_2O, 0.20; 28-31, Et_2O-EtOH (9:1), 1.9. Fraction 1 did not crystallize. Fractions 2-12 crystd. on wetting with Et_2O and on fractional crystn. from Et_2O gave 0.39 g. colorless prisms, m. 171° (VI), and 0.3 g. longish prisms, m. 133° (VII) (mixed m.p. showed a depression of 15°), while the noncrystg. mother liquors on further chromatography gave 0.55 g. VII. VI, m. 172° after 2 recrystns. from Et_2O and sublimation *in vacuo*, was identical with the dioxosparteine previously described; VII, m. 135° after 2 recrystns. from Et_2O and sublimation *in vacuo*, was shown to be another dioxosparteine isomer. Fractions 21-5 and 26-7 did not crystallize on wetting with Et_2O. Fractions 26-7 and 28-31 crystd. on wetting with C_6H_6 and were recrystd. from EtOH-Et_2O to give Me 4-oxo-3-(2-piperidyl)octahydro-1-pyridocolinecarboxylate (VIII). II (3.5 g.) in 70 cc. glacial AcOH and 0.4 g. Adams PtO_2 gave as above 3.4 g. of a colorless resinlike substance which was heated 2 hrs. at 190-210° *in vacuo*. The residue, 2.9 g., was noncryst. and after soln. in 10 cc. C_6H_6 was chromatographed through 120 g. neutral Al_2O_3. Fractions of 100 cc. were taken and evapd. separately (fraction no., eluent, and wt. in g.): 1, C_6H_6, 0; 2-10, C_6H_6, 1.31; 11-12, C_6H_6, 0; 13-15, $CHCl_3$, 0; 16-20, Et_2O, 0, and 21-4, EtOH, 1.49. The cryst. substance, m. 118-25°, from fractions 2-12 was sepd. into VI and VII; fractions 21-4 yielded VIII. VI (0.36 g.) in 10 cc. 50% H_2SO_4 was reduced electrolytically at 20-2° during 5.5 hrs. at 1.3 amp. with activated electrodes of pure Pb, made alk. with 15 g. solid $Ba(OH)_2$, steam-distd., and the steam distil-

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late made neutral to methyl orange and taken to dryness to give 0.24 g. HCl salt (IX). IX (0.21 g.) in 2 cc. hot H_2O was added dropwise to 0.51 g. Na picrate in 10 cc. H_2O, and the crude picrate which sepd. washed with alc. and recryst. from alc.-dioxane to give 0.44 g. of the picrate, m. 222° (decomp.), presumably the dipicrate of

sparteine (X). VII on similar treatment gave 2 picrates, m. 187-9° (from alc.-dioxane) (XI) and m. 211° (from alc.-dioxane) (XII), which were sepd. mechanically. XI may be the dipicrate of α-isosparteine while XII appeared to be similar to X (cf. *C.A.* 28, 4064[1]; 35, 3331[9]). By examn. of the structure of sparteine, if rings B and C are cis to each other, rings A and D can be attached to ring B or C, resp., either cis or trans. Thus, 3 isomerides can exist: (1) A:B cis, C:D cis; (2) A:B cis, C:D trans; and (3) A:B trans, C:D trans. Each of these isomerides will be resolvable into optical antipodes.

H. L. Yale

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The electrolytic reduction of some keto acids. II. R. Lukeš and F. Šorm. *Collection Czechoslov. Chem. Communs.* 13, 585-91(1948)(in English). cf. C. A. 23, 1169.—The following keto acids were subjected to reduction, electrolytically and by the method of Clemmensen: γ-acetylbutyric acid (I), γ-propionylbutyric acid (II), γ,ε-diketocaprylic acid (III), β-acetylglutaric acid (IV), hydrochelidonic (γ-ketopimelic) acid (V), dilevulinic acid (IV), and δ-ketoazelaic acid (VII). Reduction to the parent acid proceeded smoothly in the majority of cases. Electrolytic reductions were accomplished by dissolving the keto acid in H_2SO_4 soln., employing a c.d. of 5-10 amp. and total of 14-90 amp. hrs. (cf. C. A. 6, 1282). I and II gave as sole products the corresponding normal acids in good yields. III gave the expected caprylic acid in very low yield only; the principal part of III underwent fission, with valeric acid being formed. Of the keto dicarboxylic acids the reduction proceeded smoothly with IV and V whereas VII resisted electrolytic reduction. On Clemmensen reduction V and VII show exactly the opposite behavior. The electrolytic reduction of VI proceeded very smoothly, giving very pure sebacic acid, and no fission, as with III, even though the 2 acids are constitutionally very similar. R. F. Dunbar

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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SORM, F.

CZECH

Mechanism of antibiotic action. V. Effect of chloramphenicol, chlortetracycline, and oxytetracycline on the synthesis of glutamic acid decarboxylase in Escherichia coli, and of tyrosine decarboxylase in Streptococcus faecalis. D. Grünberger, J. Škoda, and F. Sorm (Česk. akad. věd, Prague). *Chem. Listy* 48, 17[illegible]; cf. *C.A.* 48, 13827*d*.—Chlortetracycline (Aureomycin) and oxytetracycline (Terramycin) as well as chloramphenicol, inhibit the formation of glutamic acid decarboxylase in *E. coli*. All 3 inhibit the growth of *Streptococcus faecalis*, but do not influence the formation of tyrosine decarboxylase. M. Hudlický

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Terpenes. VII. A new colored hydrocarbon from the oil of wormwood. F. Šorm, F. Vonášek, and V. Herout. *Collection Czech. Chem. Commun.*, 14, 91-7(1949)(in English); cf. *C.A.* 43, 3808a; 44, 935e.—Sepn. by chromatography (on Al_2O_3) of a fraction of oil of wormwood, $b_{0.5}$ 93-100°, yielded an orange bicyclic hydrocarbon with 4 double bonds, $C_{15}H_{20}$, b_1 127°, d_{20} 0.9525, n_D^{20} 1.5554. **VIII. The constitution of carotol. 3. A new synthesis of 1,7-dimethyl-4-isopropylnaphthalene.** F. Šorm and J. Mleziva. *Ibid.* 98-107.—Carvone subjected to the Reformatskii reaction and followed by hydrolysis yielded carvacrylidenecacetic acid, m. 112°, which, after boiling 6 hrs. with 100% HCO_2H, rearranged to carvacrylacetic acid, m. 69°, which, converted to the acid chloride and treated with $CdMe_2$, gave (2-*p*-cymyl)-acetone, (I) b. 128°. I with Zn and $BrCH_2CO_2Et$, followed by treatment with HCO_2H and alk. hydrolysis, gave 3-(2-methyl-5-isopropylphenyl)-2-methyl-2-propene-1-carboxylic acid (II), $b_{0.5}$ 155-7°. During the above HCO_2H treatment 20% I and EtOAc were also obtained. 3,5-Dimethyl-8-isopropyl-3,4-dihydro-1(2*H*)-naphthalenone (III) was obtained from the ring closure (by $AlCl_3$) of the acid chloride of the hydrogenated form of II. III was reduced by $LiAlH_4$ to the alc. which was dehydrogenated to 1,7-dimethyl-4-isopropylnaphthalene, m. 59°. The ultraviolet spectra, picrates, and styphnates of this synthetic sample and the one isolated from carotol (cf. *C.A.* 42, 7283b; 43, 3808b) were identical. **IX. The spectra of 2,6-dimethylazulene and 4,6-dimethylazulene in the visible and ultraviolet region.** F. Šorm and O. Knessl. *Ibid.* 201-8.—Absorption spectra of the subject compds. are compared and their relationship to other azulenes discussed. **X. On the synthesis of 2,6-dimethylazulene.** F. Šorm, V. Tomáček, and R. Vrba. *Ibid.* 345-53.—Et β-methyladipate was cyclized with Na dust in C_6H_6 to ethyl 3-methylcyclopentan-5-one-1-car-

...125°, m. ...filtered, ...[5.3.0]-3-dicone, ...and extg. with petr. ...sepd., with Al_2O_3, giving a ...methylazulene, m. 97°; trinitro-... m. 167°.

M. Q. Webb

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Synthesis of keto dicarboxylic acids. I. Sotin and I. Dolejs. *Collection Czechoslov. Chem. Commun.* 14, 1949, 12:1049 (in English). $EtO_2C(CH_2)_4COCl$ (I) (14.1 g.) added to CH_2N_2 in ether with cooling and stirring, let stand 2 hrs., the ether distd. under a vacuum, and the resulting diazo ketone in dioxane said with dil. HCl, let stand 2 hrs. and fractionated under reduced pressure, gave 80.2%. $EtO_2C(CH_2)_4COCHCl$ (II), b. 150°, m. 28°. Similarly, $EtO_2C(CH_2)_3COCl$ gave 90%, $EtO_2C(CH_2)_2COCHCl$ (III), b. 130-1°, m. 10.5-50°, and $EtO_2CCH_2CMe_2CH_2COCl$ gave 88%, $EtO_2CH_2CMe_2CH_2COCHCl$ (IIII), b. 131-2°. I and $CHN_2(CO_2Et)_2$ in C_6H_6 at room temp. 18 hrs., refluxed 6 hrs., poured into H_2O, extd. with C_6H_6, and the extr. dried over Na_2SO_4 and fractionated gave 10%. $EtO_2(CH_2)_4COCH(CO_2Et)_2$ (IV), b. 148-52°; similarly, II gave 80%, $EtO_2(CH_2)_3COCH(CO_2Et)_2$ (V), b. 141-50°. IV boiled 10 hrs. with 40 ml. concd. HCl and 20 ml. glacial AcOH, evapd. to dryness under a vacuum, ether added, and the ether-insol. material recrystd. from H_2O gave 15%. $HO_2C(CH_2)_4CO(CH_2)_4CO_2H$, m. 110.5-11°; similarly, V gave 18.5%. $HO_2C(CH_2)_3CO(CH_2)_3CO_2H$, m. 116.5°. III and $CHK(CO_2Et)_2$ in C_6H_6 refluxed 1 hrs., cooled, poured into H_2O, the aq. layer acidified, the oil sepg. extd. with ether, and the ether evapd. gave $O_2CO(CH_2)_2CMe_2CH_2CCH(CO_2H)_2$, m. 161°, subliming at 165-70° (0.1 mm.).

Herman Skolnik

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Terpenes. XI Infrared investigations of terpenes I. J. Pliva and F. Sorm. *Collection Czechoslov. Chem. Commun.* 14, 274-86(1949)(in English). A comparison of the infrared absorption spectra of the hydrogenation products obtained from several known types of terpenes with the spectra of the original compds. was used in the detn. of the C skeleton and constitution of several newly isolated sesquiterpenes. Infrared absorption-spectrum curves are given for hexahydromyrcene (2,6-dimethylheptane), hydrogenated natural farnesene, octahydrofarnesene (farnesane), myrcene, natural farnesene, farnesol, decahydro-δ-guaiazulene, tetrahydroguaiene, tetrahydro-δ-guaiene, guaiene, δ guaiene, decahydrochamazulene, octahydrochamazulenogen, chamazulene, chamazulenogen, tetrahydro-β-caryophyllene, tetrahydrohumulene, β caryophyllene, and humulene. All compds. are carefully purified and their d_4^{20}, n_D^{20} and $[\alpha]_D^{20}$ are tabulated.

P. M. Downey

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Synthesis of pseudoconhydrine. I. Synthesis of one isomeride of racemic 2-propyl-5-hydroxypiperidine. I. Šorm and J. Sicher. *Collection Czechoslov. Chem. Communs.* 14, 331-44(1949)(in English). Oxidation of 2-alkyl-8-hydroxyquinolines with fuming HNO_3 in the presence of V_2O_5 gives 2-alkylquinolinic acids from which 5-substituted 2-alkylpyridines and piperidines can be prepd. Alkylation of 8-methoxyquinoline with PrI gives 2-propyl-8-methoxyquinoline (I), b_{12} 116-24° (picrate, m. 152-3°). Refluxing with 49% HBr formed 2-propyl-8-hydroxyquinoline (II), b_{12} 89-91° (picrate, m. 155-6°; benzoate, m. 73-4°). Oxidation gave 41% 2-propyl-5,6-pyridinedicarboxylic acid (III), m. 142-3°, and 2-propyl-6-pyridone-5-carboxylic acid, m. 160°. Decarboxylation in boiling $EtCO_2H$ gave 2-propyl-5-pyridinecarboxylic acid, m. 129-30°, which was converted via the Et ester, b_{12} 135-6°, hydrazide, m. 90-1°, azide, and urethan, m. 70°, to 2-propyl-5-aminopyridine, b_{12} 134-6° (picrate, m. 161°). Diazotization yielded 2-propyl-5-hydroxypyridine, m. 91-2°, which was hydrogenated (Pt catalyst) to *dl*-2-propyl-5-hydroxypiperidine, m. 90-1°. Oxidation of 2-propylquinoline (IV) with 10% H_2O_2 in H_2SO_4 and $CuSO_4$ formed 2,3,4-pyridinetricarboxylic acid and not the expected III. II can be obtained from IV via the sulfonic acid in poor yields.

John Howe Scott

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Terpenes. XVI. Bicyclic sesquiterpene and a new azulene from the oil of Pogostemon patchouli. F. Šorm, L. Dolejš, O. Kneesl, and J. Pliva. *Collection Czechoslov. Chem. Commun.* 15, S2-95(1950)(in English); cf. C.A. 44, 9384i. The constitution of the sesquiterpene hydrocarbons of the oil is investigated. Two fractions chromatographically sepd. correspond to tricyclic (I) and bicyclic (II) sesquiterpenes. I, b. 112°, α_D^{20} −70.6°, showed one double bond by Pt-H-AcOH. II, b. 128°, α_D^{20} 8.28°, showed 2 double bonds with Pt-H-HOAc. I did not produce an aromatic hydrocarbon by S dehydrogenation, while II yielded S guaiazulene. II is probably a mixt. of IIA and IIB, as indicated by quant. ozonization products.

(IIA) (IIB)

The position of the nuclear double bond is uncertain. II is designated δ-guaiene. 15-C dehydrogenation yielded isoguaiazulene (III), $C_{15}H_{18}$, b. 118°, α_D^{20} 1.4818, d_4^{20} 0.8830, MRD = 67.25, presumably with shift of an alkyl group.

XVII. Synthesis of a hydrocarbon of the ionone series. F. Šorm and L. Dolejš. *Ibid.* 96-8. Humulene (I), previously identified as a monocyclic sesquiterpene, occurs in oil of hops with farnesene and β-caryophyllene. The hexahydro deriv. of I has different properties from 3-methyl-1-(2,2,6-trimethylcyclohexyl)-pentane, prepd. from β-ionone by the Grignard reaction, dehydration, and hydrogenation.

N. T. Firmaci

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Condensation of ethyl cyanoacetate with some cyclic anhydrides and imides. [illegible] Sorm, [illegible] and P. [illegible] kovský (Tech. Univ., Prague) [illegible] *Chem. Communs.* 15, [illegible] English [illegible] Methylsuccinimide [illegible] with the [illegible] [illegible] gives [illegible] of the [illegible] II [illegible] cyano-α-ketoxidipic acid. [illegible] of the same product. II [illegible] with dry HCl gives the di-Et ester. III [illegible] I with [illegible] III [illegible] with Adams catalyst [illegible] hydroxyadipate [illegible] gives 41% of the half ester, [illegible] pimelic acid, converted by treatment with [illegible] into the di-Et ester, [illegible] form Et phthaloylcyanoacetate IV [illegible] Phthaloyl chloride and [illegible] give IV [illegible]

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11-4

C.A.

Isolation of hydroxylysine from a gelatin hydrolyzate F. Šorm and O. Mikes. *Collection Czechoslov. Chem. Communs.* 15, 288-94(1950)(in English).—Hydroxylysine (I) was obtained from a gelatin hydrolyzate by the application of paper chromatographic and cation exchange procedures, and characterized as the *picrate*, m. 227-8°. The gelatin hydrolyzate was freed from aromatic amino acids by chromatography on active charcoal and the aliphatic amino acids in the filtrate were absorbed on a column of "Katex F4m Extra." Acidic and neutral amino acids were eluted partially by H_2O and completely by 2% C_5H_5N, leaving arginine, I, and lysine (II) which could be eluted with 0.1 N aq. NH_4OH. Good sepn. of I and II on paper chromatograms could be obtained with BuOH-AcOH as the mobile phase, with the R_f values (compared to $CH_3NH_2CO_2H$) being I, 0.35, and II, 0.21. Bernard Klein

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C. A.

11-4

Water-soluble dinitrophenyl derivatives of proteins

F. Šorm, J. Körbl, and L. Matoušek (Tech. Univ., Prague) *Collection Czechoslov. Chem. Communs.* 15, 293-302(1950) (in English).—H_2O-sol. dinitrophenyl (DNP) deriv. of horse serum albumin, and ovalbumin were prepd. in a manner to prevent denaturation, by eliminating the use of EtOH and working in $NaHCO_3$ soln. DNP serum albumin was obtained in cryst. form.

Bernard Klein

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420013-7

Sonn, F.

Soviet biochemistry. F. Sonn. *Časopis Lékařů Českých* 90, 757-60(1951).—A review of the history and recent organization of Soviet biochemistry. Anthony Zenišek

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SORM, F.

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X

180°. $CH_3Ph{\cdot}CO{\cdot}CH_2Cl$ with fused NaOAc–AcOH at the b.p. (4 hr.) yields $CH_3Ph{\cdot}CO{\cdot}CH_2{\cdot}OAc$ which yields an *oxime*, $C_{11}H_{13}O_3N$, m.p. 117°, which reduced in AcOH (H_2-Pt) yields 2-acetamido-1-acetoxy-3-phenylpropane, m.p. 118–116°, which on addition to HNO_3–H_2SO_4 (cooling) yields the *p*-nitro-deriv., m.p. 108–108°, from which is obtained by hydrolysis with 5% HCl (water-bath, 4 hr.) the hydrochloride of 2-amino-3-*p*-nitrophenylpropan-1-ol, $C_9H_{12}O_3N_2{\cdot}HCl$, m.p. 171–173° [*dichloroacetamido* deriv., $C_{11}H_{12}O_4N_2Cl_2$, m.p. 180°, by reaction of $CHCl_2{\cdot}CO_2Me$ at 80° (2 hr.)].

I. G. M. CAMPBELL

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Terpenes. XXIII. The composition of oil of carrot (Daucus carrota). F. Sörm, M. Zaoral, J. Arient, J. Pliva and V. Herout (Central Chem. Research Inst., Prague). *Collection Czech. Chem. Commun.* 10, 47-56(1951); cf. *C.A.* 40, 474h.—Oil of carrot, d_4^{20} 0.9365, n_D^{20} 1.4635, $[\alpha]_D^{20}$ −17.5°, of Dutch origin, was fractionated by means of a 40 theoretical-plate column and the fractions obtained subjected to repeated chromatographic sepn. Its qual. compn. as detd. by infrared examn. and the prepn. of various derivs. showed that carotol was the principal component of the oil; α- and probably β-pinene, dipentene, p-cymene, carvone, geranyl acetate, β-caryophyllene, bergamotene, and bisabolene were other components; a sesquiterpene aldehyde, $C_{15}H_{24}O$, was also isolated. The highest-boiling fractions contained a mixt. of diterpenic hydrocarbons and daucol

W. M. Potts

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11A

Proteins and amino acids. VII. Clupein. F. Sorm and Z. Sormová (Central Chem. Research Inst., Prague). *Collection Czechoslov. Chem. Communs*, 16, 207-13(1951) (in English); cf. *C.A.* 46, 153c.—Amino acid compos. of the clupein methyl ester hydrochloride fractions prepd. after Felix and Dirr (*C.A.* 24, 376) were found to vary in amino acid content. Fraction B was found to differ from fractions A and C in that it contained small amts. of aspartic and glutamic acids in addn. to the amino acids common to all fractions. The end groups of clupein were investigated by prepg. dinitrophenylclupein (I) as the methyl ester hydrochloride after Sanger (*C.A.* 40, 5390[4]). The complete hydrolysis of I and analysis of the products on a silica-gel column indicated proline and probably serine as terminal amino acids. Partial hydrolysis of I yielded some neutral dinitrophenyl peptides identified as dinitrophenylprolylalanine, dinitrophenylprolylalanylserine, and dinitrophenylserylalanylserine. Proline-alanine-serine is indicated as the terminal amino-acid sequence in clupein counter to currently quoted formulas for clupein. J. M. Perri

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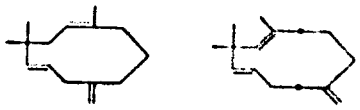
CA

The structure of humulene. F. Šorm, M. Streibl, J. Pliva, and V. Herout (Central Chem. Inst., Prague, Czech.). *Chem. Listy* 45, 308-9(1951).—On the basis of hydrogenation, ozonization, mol. refraction (mol. depression −0.6 for D line), and optical inactivity, 2 formulas having 11-membered rings are suggested for humulene:



M. Hudlický

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11 K

Antitubercular activity of 2-amino-4-hydroxy-5-pyrimidinecarboxylic acid, pyrimidine analog of *p*-aminosalicylic acid. F. Šorm, J. Hlavnička, J. Sicher, and A. Šimek (Central Chem. Inst., Prague, Czech.). *Chem. Listy* 45, 422-3(1951).—Guanidine carbonate (4 g.) in aq. KOH (2.14 g. in 40 ml.) was treated with EtOCH(CCO$_2$-Et)$_2$; crystals of Et 2-amino-4-hydroxy-5-pyrimidinecarboxylate were sepd. and recrystd. from water with a small amt. of EtOH or from AcOH, yield 4.3 g. (62%), m. 290° (decomp.). The free acid was obtained from its ester by sapon. with ethanolic KOH and acidification with AcOH in a 76% yield, m. 250° (decomp.). Its Na salt crystallizes with 2 H_2O. Tuberculostatic activity of this acid is half that of *p*-aminosalicylic acid. M. Hudlický

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SORM F.

O sovetske biochemii. [Biochemistry in the Soviet Union]
Cas. lek. cesk. 90:25 22 June 51 p. 757-60.

1. Names of institutes and directors given, also their respective fields of research.

CIML 20, 10, Oct. 51

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SORM, Frantisek

Chemical Abst.
Vol. 48
Apr. 10, 1954
General and Physical Chemistry

Laboratorní chemické předpisy. Edited by Frantisek Sorm. Prague. 1952. 88 pp. 36 Kčs. Reviewed in Chem. Listy 47, 639(1953).

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CA

Organic Chemistry - 10

Separation of dinitrophenylhydrazones by chromatography on activated calcium sulfate. F. Sorm, M. Suchý, and V. Herout (Central Chem. Inst., Prague, Czech.) (*Chem. Listy* 46, 55-6(1952).—A mixt. of 2,4-dinitrophenylhydrazones was successfully sepd. by chromatography of a C_6H_6 soln. on $CaSO_4$ freshly ppted. from $CaCl_2$ and H_2SO_4 and dried 7 hrs. at 160-80°. Elution was carried out with petr. ether under a pressure of 200 mm. M. Hudlický

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CA

General & Physical Chemistry 6 2

The formol titration of thiazolidine-4-carboxylic acid. L. Matoušek and F. Šorm (Central Chem. Inst., Prague, Czech.). *Chem. Listy* 46, 111-12(1952).—Math. treatment of equil. of CH_2O and hydroxyamino acids and mercaptoamino acids led to a value of 5.03 for the *dissocn. const. of methylthiazolidine-4-carboxylic acid.* M. Hudlický

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SORM, František

~~František Sorm~~

Proteins and amino acids. XIII. Use of azobenzenesulfonyl chloride in the determination of end amino acids of peptide chains. Bořivoj Keil, Věra Kneslová, and František Sorm. *Chem. Listy* 46, 167-70(1952).—The journal reference in *C.A.* 48, 3004c should have been *Chem. Listy* 46, 167-70(1952) instead of *Ibid.* 167-70. B. J. C.

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Pharmaceuticals - 4

Isolation of a spasmolytic substance from Matricaria chamomilla. F. Šorm, Z. Čekan, V. Herout, and H. Rašková (Central Chem. Inst., Prague, Czech.). *Chem. Listy* 46, 308-9(1952).—The spasmolytic principle of chamomile, *apigenine* (I) (0.45 g.), was isolated by digestion of chamomile blooms (2.544 g.) followed by ether extn. The triacetyl, *deriv.*, m. 178-81° (from EtOH), prepd. from 120 mg. I and 7.5 ml. Ac_2O was hydrolyzed with 10% HCl to give a yellow powder, m. 342-4°. M. Hudlický

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CA

Biochemical Chemistry A
11

Properties of transamidase. František Šorm, Karel Sebesta, and Timotej Turský (Central Chem. Inst., Prague, Czech.). *Chem. Listy* 46, 375-9(1952).—Kidney transamidase was found to be a lyoenzyme which does not require the presence of a specific coenzyme. The enzyme is inhibited by heavy metals and by ornithine, but not inhibited by CN^- and Complexone. The enzyme is stable at pH 5-9 and is inactivated by heating 5 min. at 50°. Activity of the transamidase was followed by paper chromatography, which separates arginine from glycocyamine. Ornithine was found among the products of the enzymic reaction of arginine and glycine.

M. Hudlický

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Biological Chemistry - A
General - 11

Proteins and amino acids. XIII. Activation of chymotrypsinogen to chymotrypsin. Frantiček Šorm, Bořivoj Keil, and Ivan Rychlík (Central Chem. Inst., Prague, Czech.). *Chem. Listy* 46, 461-4(1952); cf. *C.A.* 46, 11295f.—On the basis of quant. paper chromatography of dinitrophenyl derivs. of amino acids, *chymotrypsinogen* (I) was found to contain no basic end group. Activation is followed by the formation of 2 amino groups (based on the mol. wt. 22500). In addn., a mixt. of tri- to octapeptides is formed as a result of hydrolytic processes. Cryst. α-chymotrypsin consists of 2 or 3 proteins having the same proteolytic activity. During the crystn., the content of a form contg. 1 mole of alanine and 1 mole of phenylalanine as end amino acids increases. Proteins with aspartic acid, serine, and threonine as end amino acids accumulate in the mother liquors. Activation of I is based probably on the cleavage of cyclic peptide chains which reveals the center of activity. **XIV. Enzymic activity of dinitro derivatives of α-chymotrypsin.** Frantiček Šorm and Ivan Rychlík. *Ibid.* 465-8.—By the action of 1,2,4-$C_6H_3F(NO_2)_2$ 150 mg. on lyophilized chymotrypsin (I) (300 mg. in a soln. contg. 300 mg. $NaHCO_3$ in 15 ml. H_2O), dinitrophenyl derivs. contg. 2, 4, and 7 dinitrophenyl groups per mol. of I, resp., were prepd., purified by dialysis and analysed by spectrophotometry. Protease and chymase activities drop with increasing rate of substitution, esterase activity of I contg. 2 dinitrophenyl groups is higher, that contg. 4 groups about the same, and that contg. 7 dinitrophenyl groups per mol. of I lower than that of I. Michaelis const. and max. reaction rate of I pure and I contg. 2, 4, and 7 dinitrophenyl groups, resp., are: 0.013, 0.0032, 0.0030, and 0.0018; 0.50, 0.40, 0.30, and 0.12. Tendency of synthesizing polypeptides of methionine from its Pr ester increases with increasing amt. of dinitrophenyl groups. **XVI. Interaction of proteins with electrolytes.** Vladimír Kačena and Luboš Matoušek. *Ibid.* 525-8; cf. *C.A.* 46, 11315g.—A dynamic equil. exists in a system protein-metal ions in which protein (serum albumin) represents a complexing agent of low diffusion const. This accounts for the fact that a wave showing the reduction of ions forming a complex with serum albumin is, at a certain pH, higher than that corresponding to the flow of ions in the complex.

M. Hudlický

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CA

Microbiology - III

Proteins and amino acids. XV. Isolation and properties of protein toxins of Shigella dysenteriae. František Šorm, Zora Šormová, Pavla Šebestová, and Věra Matějovská (Central Chem. Inst., Prague, Czech.). *Chem. Listy* 46, 468-70(1952); cf. *C.A.* 46, 11204d. Ext. of the *R* strain of *Shigella dysenteriae* (Shiga-Krusae) was fractionally pptd. with $(NH_4)_2SO_4$, and the concentrate subjected to electrophoresis in an agar gel. Out of 5 protein components, the two prevailing were found extremely toxic, having LD_{50} 0.3 and 0.0075 γ for 15 g. mice, resp. The more toxic component contains β-alanine. Both toxins seem to be pure proteins, contg. no nucleic acids. M. Hudlický

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Biological Chemistry - H
General - II

CA

Identity of the green liver protein with catalase. F. Sorm and K. Šebesta (Central Chem. Inst., Prague, Czech.). *Chem. Listy* 46, 406(1952).—On the basis of infrared spectra, the green protein isolated from horse liver by Lauffberger (*Biol. Listy* 22, 200(1937)) was found to be identical with catalase from horse liver. M. Hudlický

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NEJEDLY, Zdenek; SORM, F.

Telegram of the Czechoslovak Academy of Sciences expressing condolences on the death of Generalissimo Iosif Vissarionovich Stalin, President of the Council of Ministers. Chekh.biol. 2 no.1:3 Ap '53.

(MLRA 7:2)

1. Prezident Chekhoslovatskoy Akademii nauk (for Nejedly).
2. Glavnyy sekretar' Chekhoslovatskoy Akademii nauk (for Sorm).
(Stalin, Iosif, 1879-1953)

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SORM, F.

NEJEDLY, Z.; SORM, F.

Telegram of condolence sent by the Czechoslovak Academy of Sciences on the occasion of the death of Generalissimo I.V.Stalin, Chairman of the Council of Ministers [in Russian and English]. Chekh.fiz.zhur. 3 no.1: 1,7 Mr '53. (MLRA 7:6)

1. President of the Czechoslovak Academy of Sciences (for Nejedly).
2. General Secretary of the Czechoslovak Akademy of Sciences (for Sorm).
(Stalin, Iosif, 1879-1953)

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[redacted] K. SORM, František

Advancements in the chemistry of sesquiterpenes. CII František Sorm. XIIIth Intern. Congr. Pure Appl. Chem., Stockholm 1953; Collection Czechoslov. Chem. Communs. Suppl. 2, 19, 68-80(in German); Magyar Tudományos Akad. Kémiai Tudományok Osztályának Közleményei 3, 351-66(1953); cf. C.A. 47, 9044c.—Sesquiterpene hydrocarbons were isolated and identified by distn. combined with chromatographic adsorption on alk. Al_2O_3 and infrared spectrophotometry. It is possible to sep. sesquiterpenes differing in no. of double bonds or in C skeletons. The infrared spectra of caryophyllene from clove oil, oil of wormwood, and oil of bergamot were compared with the spectra of γ-cadinene and δ-cadinene from oil of citronella, ε-cadinene from ylang-ylang oil, cadinene regenerated from *l*-cadinene-HCl, tetrahydro-γ-cadinene, tetrahydro-δ-cadinene, and cadinane from regenerated cadinene. The explanation of structures of unknown compds. was aided by hydrogenation and elimination of functional groups of the sesquiterpenes in order to compare the skeleton with known satd. hydrocarbons. By this method the structures of 2 diterpene hydrocarbons, $C_{20}H_{30}$ and $C_{20}H_{28}$, isolated from oil of wormwood were clarified. The infrared spectra of the partially hydrogenated aromatic diterpene, $C_{20}H_{30}$, were shown to be similar to that of 2,6-dimethyl-10-(*p*-tolyl)-undecane. The structures of monocyclic sesquiterpenes of the bisabolane, humulene, and elemol (I) type were discussed. The skeleton of I appears to be 1-methyl-1-ethyl-2,4-diisopropylcyclohexane. Dicyclic sesquiterpenes such as cadinene, calacorene, caryophyllene, caratol, chamazulene, and the isomeric acorone and isoacorone (from calamus oil) were discussed and structures suggested for them.

M. M. Bender

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SOVMY

MATOUSEK, L.; SORM, F.

On proteins and aminoacids. Part 11. On clupein. Part 2. [in German with summary in Russian]. Sbor.Chekh.khim.rab. 18 no.1:1-6 F '53. (MLRA 7:6)

1. TSentral'nyy khimicheskiy institut, Praga. (Clupein)

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SORM, F.

SICHER, J.; FARKAS, J.; SORM, F.

Studies in the chloramphenicol series. Part 4. Synthesis of 1-(p-nitrophenyl)-2-hydroxymethyl-2-dichloro-acetamido-1,3-propandiol and a correction [in English with summary in Russian]. Sbor.Chekh.khim.rab. 18 no.1:102-105 F '53. (MLRA 7:6)

1. Chentral Chemical Research Institute, Prague.
(Chloramphenicol)

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SOKM, F

SORM, F.; VERES, K.; HEROUT, V.

On terpenes. Part 36. The constitution of calamenene [in English with summary in Russian]. Sbor.Chekh.khim.rab. 18 no.1:106-115 F '53. (MLRA 7:6)

1. Central Chemical Research Institute, Prague.
(Sesquiterpenes)

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JORA

SORM, F.; ZAORAL, M.; HUROUT, V.

On terpenes. Part 38. On the constitution of natural bisabolol and bisabolol monoxide from matricaria oil [with summary in English]. Sbor.Chekh.khim.rab. 18 no.1:116-121 F '53. (MLRA 7:6)

1. Central Chemical Research Institute, Prague.
(Bisabolol) (Matricaria oil)

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SORM, F.

HEROUT, V.; ZAORAL, M.; SORM, F.

On terpenes. Part 39. Synthesis of two tetrahydrobisabolols [with summary in English]. Sbor.Chekh.khim.rab. 18 no.1:122-126 F '53. (MLRA 7:6)

1. Central Chemical Research Institute, Prague.
(Bisabolol) (Matricaria oil)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420013-7

Sorm, F.

SORM, F.; CEKAN, Z.; HEROUT, V.; RASKOVA, H.

Isolation spasmolytically active substance from Matricaria chamomilla L. [with summary in English]. Sbor.Chekh.khim.rab. 18 no.1:127-130 F '53. (MLRA 7:6)

1. Central Chemical Research Institute, Prague. 2. Institute of Pharmacology of the Medical Faculty, Charles University, Prague.
(Matricaria oil) (Flavones)

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SORM, F.

SMRT, J.; SORM, F.

Proteins and amino-acids. Part 12. Synthesis of c-methylglutamic acids [with summary in English]. Sbor.Chekh.khim.rab. 18 no.1:131-139 F '53. (MLRA 7:6)

1. Central Chemical Research Institute, Prague.
(Methylglutamic acids)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420013-7

SORM, F.; SEBESTA, K.; TURSKY, T.

Some properties of transamidinase [with summary in English]. Sbor. Chekh.khim.rab. 18 no.1:140-150 F '53. (MLRA 7:6)

1. Central Chemical Research Institute, Prague.
(Transamidinase)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420013-7

SORM, F.; KEIL, B.; RYCHLIK, I.

On albumins and aminoacids. Part 15. Activation of chymotrypsinogen to chymotrypsin [with summary in German]. Sbor.Chekh.khim.rab. 18 no.2: 285-293 Ap '53. (MLRA 7:6)

1. Institut organicheskoy khimii Chekhoslovatskoy Akademii nauk, otdeleniye organicheskoy biokhimii, Praga. (Chymotrypsin)

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SORM, F.; CERNY, V.

"Steroids. IV. New Method for Preparation of 3-Hydroxyetienic-(5) acid from 3-acetoxy-17-ketoandrostane-(5)." P. 407
(COLLECTION OF CZECHOSLOVAK CHEMICAL COMMUNICATIONS. SBORNIK CHEKHOSLOVATSKIKH KHIMICHESKIKH RABOT. Vol. 18, No. 3, June 1953-Praha, Czech.)

So: Monthly List of East European Accessions, (EEAL), LC, Vol 4, No. 4, April 1955, Uncl.

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Proteins and amino acids. XIV. Enzymic activity of dinitro derivatives of α-chymotrypsin. F. Šorm and J. Rychlík. *Collection Czech. Chem. Commun.* 18, 413-21 (1953).—See *C.A.* 46, 1126-1*f*. H. L. H.

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Sorm, F.

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Proteins and amino acids. XV. Isolation and properties of protein toxins of Shigella dysenteriae. F. Šorm, Z. Šormová, P. Šebestová, and V. Matějovská. Collection Czech. Chem. Communs. 18, 422-7(1953).—See C.A. 46, 11315h. H. L. H.

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420013-7

Chloramphenicol series. V. Analogs containing chlorine in the side chain and oxazolines. Jiří Farkaš and Jiří Sicher (Czech. akad. ved., Prague). *Collection Czechoslov. Chem. Communs.* 18, 660-66(1953)(in English).—See *C.A.* 49, 218*b*. VI. Steric course of the reduction of dehydrochloramphenicol and related compounds. Jiří Sicher, Miroslav Svoboda, Magdalena Hrdá, Josef Rudinger, and František Šorm (Czech. akad. ved., Prague). *Ibid.* 487-[illegible]—See *C.A.* [illegible] 219*b*.

H. L. H.

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Sorm, F.

SICHER, J.; SVOBODA, M.; HRDA, M.; RUDINGER, J.; SORM, F.

Studies in the chloramphenicol series. Part 6. Steric course of the reduction of dehydrochloramphenicol and related compounds [in English with summary in Russian]. Sbor.Chekh.khim.rab.18 no.4:487-499 Ag '53. (MLRA 7:6)

1. Department of Organic Synthesis, Institute of Organic Chemistry, Czechoslovak Academy of Science, Prague. (Chloromycetin)

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SORM, F.

1706* On Terpenes. XLIII. Infrared Investigations of Terpenes. IV. (English.) J. Pliva, V. Herout, B. Schneider and F. Sorm. *Collection of Czechoslovak Chemical Communications*, v. 18, no. 4, Aug. 1953, p. 600-611.

Infra-red spectra of cadinanes, tetrahydroisozingiberene, and calacorane show that these hydrocarbons differ from each other merely in their spatial configuration. Tables, graphs. 22 ref.

Inst. Org. Chem., Czechoslovak Acad. Sci., Prague.

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SORM, F.

SORM, F.; HOLUB, M.; SYKORA, V.; MLEZIVA, J.; STREIBL, M.; PLIVA, J.; SCHNEIDER, B.; HEROUT, V.

On terpenes. Part 46. Sesquiterpenic hydrocarbons from oil of sweet flag [in English with summary in Russian]. Sbor.Chekh.khim.rab. 18 no.4:512-526 Ag '53. (MLRA 7:6)

1. Department of Natural Products, Institute of Organic Chemistry, Czechoslovak Academy of Science, Prague. (Sesquiterpenes) (Calamene)

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SORM, F.

SORM, F.; NOVAK, J.; HEROUT, V.

On terpenes. Part 51. The composition of chamazulene; preliminary communication [~~in English with summary~~ in Russian]. Sbor.Chekh.khim. rab. 18 no.4:~~527-529 Ag~~ '53. (MLRA 7:6)

1. Department of Natural Products, Institute of Organic Chemistry, Czechoslovak Academy of Science, Prague.
(Chamazulene)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420013-7

SORM, FRA TISEK

Amino acids and peptides. VIII. Peptides of 2,4-diaminobutyric acid. Milan Zaoral, Josef Rudinger, and František Sorm (Czech. akad. ved., Prague). Collection Czechoslov. Chem. Communs. 19, 530-48(in Russian; English summary, 548-9)(1953).—See C.A. 49, 179a. IX. Constitution of phalloidine. 2. Bedřich Meloun, Bořivoj Keil, and František Sorm. Ibid. 19, 153-60(1954)(in German).—See C.A. 49, 180d. H. L. H.

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SORM, F.

KEIL, B.; SORM, F.

On proteins. Part 19. Methylation of chymotrypsogen and chymotrypsin [with summary in English]. Sbor.Chekh.khim.rab. 18 no.4:550-559 Ag '53. (MLRA 7:6)

1. Department of Organic Biochemistry, Central Chemical Research Institute, Prague. (Chymotrypsin) (Methylation)

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