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A simple synthesis of γ-aminobutyric acid. F. Sorm and J. Beránek (Czech. Akad. Věd, Prague, Czech.). *Chem. Listy* 47, 1241-3(1953).—A prepn. of $H_2NCH_2CH_2CH_2CO_2H$ (I) is described by the hydrogenation of $NCCH_2CH_2CO_2K$ (II) or $NCCH_2CH_2CO_2Et$ (III). $ClCH_2CH_2CO_2Et$ refluxed with KCN and KI in aq. EtOH 16 hrs. gave 56.4% III, b_{10} 101-2°. This was hydrolyzed at 20° with KOH in aq. EtOH to II, m. 107° (from MeOH). Hydrogenation of 5 g. II in 25 ml. MeOH satd. at 0° with NH_3 over 1 g. Raney Ni at 90° and 110 atm. yielded, after 2 hrs., 2.5 g. (67%) I, m. 202°. The same product was obtained by hydrogenating 5 g. III in AcOH 25 ml. and 1 ml. H_2SO_4 over 0.5 g. PtO_2 at 20° and 100 atm. for 1 hr. and hydrolyzing the product with $Ba(OH)_2$; yield 76%. M. Hudlický

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SORM, F.; LABLER, L.; ČERNY, V.

Steroids. Part 6. 3-dimethyloamino derivatives of steroids [in Russian with summary in English]. Sbor.Chekh.khim.rab. 18 no.6:842-853 D '53. (MLRA 7:6)

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

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SORM, F.

HEROUT, V.; SORM, F.

Components of wormwood (Artemisia absinthium L.) and the isolation of a crystalline pro-chamazulogenogen [in English with summary in Russian]. Sbor.Chekh.khim.rab. 18 no.6:854-869 D '53. (MLRA 7:6)

1. Department of Natural Substances, Institute of Organic Chemistry, Czechoslovak Academy of Science, Prague. (Wormwood) (Chamazulogen)

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SORM, F.; POKORNY, J.

Terpenes. Part 47. Synthesis of 1,7-dimethylazulene [abstract; in English]. Sbor.Chekh.khim.rab. 18 no.6:885 D '53. (MLRA 7:6)

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

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SHORM, F.; GEROUT, V.; PLIVA, I.

Advances of chemistry of sesquiterpenes. Uspekhi Khim. 22, 564-82 '53. (CA 47 no.19:9944 '53) (MLRA 6:4)

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SHORM, F., akademik, glavnyy uchenyy sekretar'.

Academy of Sciences of Czechoslovakia. Priroda 42 no.9:57-58 S '53. (MLRA 6:8)

1. Chekhoslovatskaya Akademiya nauk.
(Academy of Sciences of Czechoslovakia)

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SORM, FRANTISEK

Terpenes. XLVII. Synthesis of 1,7-dimethylazulene. František Sorm and Josef Pokorný (Prague, Czech.) *Chem. Listy* 47, 68-9(1953); cf. *C.A.* 47, 8704h.—An unequivocal synthesis of *1,7-dimethylazulene* was carried out by the following series of reactions: *Et 3-methyl-2-oxocyclopentanecarboxylate* (I) → *Et 3-methyl-2-oxo-1-(3-cyanopropyl)-cyclopentanecarboxylate* (II) → *Et 3-methyl-2-oxocyclopentanebutyrate* (III) → *Et 3-methyl-2-carbethoxymethylenecyclopentanebutyrate* (IV) → *Et 3-methyl-2-carbethoxymethylcyclopentanebutyrate* (V) → the free acid (Va) → *8-methylbicyclo[5.3.0]decan-5-one* (VI) → *5,8-dimethylbicyclo[5.3.0]-decan-5-ol* (VII) → *5,8-dimethylbicyclo[5.3.0]dec-4-ene* (VIII) which gave *5,8-dimethylbicyclo[5.3.0]decane* (IX) on hydrogenation and 1,7-dimethylazulene (X) on dehydrogenation. I (41 g.) (0.24 mole) was added in 3 portions to a suspension of 6.2 g. (0.27 mole) Na dust in 250 ml. PhMe, the mixt. refluxed 4 hrs. at 130°, the hot Na salt gel treated with 43.2 g. (0.27 mole) $BrCH_2CH_2CH_2CN$, heated 20 hrs. at 130°, decompd. with H_2O, and distd. *in vacuo*, yielding 43.6 g. (77.6%) II, $b_{0.1}$ 128-30°. II (41.95 g.) hydrolyzed by refluxing with 200 ml. concd. HCl 10 hrs. yielded 17.24 g. (52%) *3-methyl-2-oxocyclopentanebutyric acid*, m. 45-50° [semicarbazone, m. 151-5° (from EtOH)], which gave 75.5% III, $b_{0.15}$ 98-9°, by esterification in the presence of anhyd. HCl, and 91% III by azeotropic esterification [semicarbazone, m. 150° (from EtOH)]. III (39.4 g.) and 24 g. Zn wool in 60 ml. dried PhMe treated with 10 ml. $BrCH_2CO_2Et$, heated, treated with an addnl. 20 ml. $BrCH_2CO_2Et$, the mixt. refluxed 15 min., decompd. with ice and 80 ml. 10% H_2SO_4, the org. layer extd. with ether, and the ext. washed with aq. $NaHCO_3$, dried, and distd., yielded 22.5 g. (43%) IV, $b_{1.5}$ 155-60°. Hydrogenation of IV in AcOH over PtO_2 gave 95% V, $b_{0.5}$ 130-1°. Hydrolysis of 12.7 g. V with 120 ml. 10% NaOH under N atm. gave 9.5 g. (95%) Va. The acid Va (2.28 g.) distd. with 2.3 g. Fe dust and 150 mg. powd. $Ba(OH)_2$ and the distillate washed with aq. K_2CO_3 and again distd. gave 0.8[illegible] g. ([illegible]%) VI, b_{15} 117-20° [semicarbazone, m. 236° (from MeOH)]. A Grignard reagent from 735 mg. Mg and 3 g. MeI in 23[illegible] ether treated with 1 g. VI in 8 ml. ether, the mixt. refluxed 5 hrs., decompd. with ice and NH_4Cl, the distd. VII (260 mg.) dehydrated by heating 20 min. at 180° with 600 mg. $KHSO_4$, and the mixt. chromatographed gave 178 mg. VIII, b_{12} 97-100°. VIII (350 mg.) hydrogenated over 110 mg. PtO_2 in EtOH and AcOH gave 160 mg. IX, b_{12} 76°. Dehydrogenation of 3.17 g. VIII with 1.87 g. S by heating 40 min. at 230° gave, after chromatography, 70 mg. blue X [$C_6H_2(NO_2)_3$ complex, m. 158°]. Infrared and ultraviolet spectra of X are given. **XLVIII. Constitution of α- and β-cadinene.** Vlastimil Herout and František Šantavý. *Ibid.* 70-5.—By ozonization, α-cadinene from ylang-ylang oil was identified as *5-isopropyl-2,8-dimethylenebicyclo[4.4.0]decane* (I). On the basis of the reaction with MeMgBr and MeLi, *β-cadinene* is supposed to be *5-isopropyl-2,8-dimethylbicyclo[4.4.0]deca-1,7-diene* (II). I in AcOEt oxonized 5.5 hrs. with 3% O_3 gave, after chromatography, approx. 45% of a diketone, $C_{15}H_{24}O_2$, m. 102-5° [from C_6H_6-petr. ether (1:4)], believed to be *5-isopropyl-8-methylbicyclo[4.4.0]decane-2,8-dione* (III) [*dioxime*, m. [illegible] (from EtOH-petr. ether); *disemicarbazone*, m. [illegible] (from [illegible])

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FRANTIŠEK ŠORM

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EtOH)]. δ-Cadinene isolated from citronella oil treated with peroxyphthalic acid in ether gave after evapn. of the ether and chromatography δ-*cadinene dioxide*, m. 83.5–4.6° (from petr. ether), $[\alpha]^{18}_{D}$ 13.3°, and an oxide diol, $C_{15}H_{28}O_3$, m. 123.5–9.5° [from C_6H_6-petr. ether (3:1)], $[\alpha]^{18}_{D}$ 1.7°. The dioxide of II was refluxed with MeMgBr in ether 15 hrs., 120 hrs., and in dioxane 6 hrs.; in all 3 instances, unchanged starting material was recovered; refluxing the dioxide of II 48 hrs. with MeLi gave the same result. The infrared spectrum of III is given. XLIX. Sesquiterpenes of the cadinane type in Javanese citronella oil. Vlastimil Herout, Tibor Kolos, and Josef Pliva. *Ibid.* 440–8.—Two pure sesquiterpenes, γ-*cadinene* and δ-*cadinene*, have been isolated from *Javanese citronella oil* (I). The formula suggested for γ-cadinene in the literature (*C.A.* 27, 280) is challenged. No acyclic *sesquicitronellene* was found in the oil investigated. Fractionation and chromatography of I gave fractions contg. δ-cadinene (II), d_{20} 0.9155, n^{18}_{D} 1.5066, $[\alpha]^{18}_{D}$ 93.8°, log ε (246 mμ) 2.55, hydrogenation of which gave *cadinane*, d_{20} 0.8820, n^{18}_{D} 1.4792, $[\alpha]^{18}_{D}$ 4.3°. II and HCl at −20° gave (−)-*cadinene-2HCl*, m. 117–18° (from EtOH), $[\alpha]^{18}_{D}$ −37.8°. Fraction contg. *isocadinene* gave by hydrogenation a compd., d_{20} 0.8852, n^{18}_{D} 1.4773. γ-Cadinene, d_{20} 0.9125, n^{18}_{D} 1.5075, $[\alpha]^{18}_{D}$ 147.9°, log ε (246 mμ) 2.25. The cadinane and cadinene-2HCl prepd. from γ-cadinene were identical with the products prepd. from δ-cadinene. M. Hudlický

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Proteins. XIX. Methylation of chymotripsinogen and chrymotry sin. p.245
(Chemical Listy. Vol. 47, No 2, Feb. 1953) Czechoslovakia

SO: Monthly List of East European Accessions, Vol. 2, #8, Library of Congress, August 1953, Incl.

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"Reaction of Ketene with Acetals of Aldehydes and Ethyl Orthoformate," p 413,
(Chemicke Listy, Vol.47, No.3, Mar. 1953, Praha.)

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" Steroids, Part 6. Steroid 3-Dimethyla-Mino-Derivatives," p. 418.
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Amino acids and peptides. VIII. Peptides of 2,4-diaminobutyric acid. Milan Zaoral, Josef Rudinger, and František Šorm (Czech. Akad. Věd., Prague, Czech.). *Chem. Listy* 47, 427–30(1953); cf. *C.A.* 48, 3903*e*.—[In this abstr., R = *carbobenzyloxy* throughout.] Several peptides and intermediates of L-$H_2NCH_2CH_2CH(NH_2)CO_2H$ (I) were prepd. L-Glutamic acid gave by the Schmidt degradation, 2% I; *di-HCl salt*, m. 195–6°; *dipicrate*, m. 181°; *2-naphthalenesulfonate*, $C_8H_{18}N_2O_6S_2 \cdot 2H_2O$ (the formula in the orig. is wrong), m. 215° (from H_2O). L-$RNHCH_2CH_2CH(NHR)CO_2H$ (II), m. 90–1°; *hydrazide*, m. 150–2°, prepd. through II Et ester or by treating 1-carbobenzyloxy-3-carbobenzyloxyamino-2-pyrrolidinone (IIA) with 80% N_2H_4 H_2O soln. in EtOH. I.2HCl (10 g.) in 240 ml. *N* NaOH with 12 g. $ClCO_2CH_2Ph$ (III) gave 7.5 g. (24.8%) II, m. 90–2°, 5.4 g. (39.6%) $RNHCH_2CH_2CH(NH_2)CO_2H$ (IV), m. 234–7° (from H_2O), and 3.7 g. (23.1%) I. Similarly, 3 g. $H_2NCH_2CH(NH_2)CO_2H.HCl$ in 47 ml. *N* NaOH and 2.8 g. III in 52 ml. *N* NaOH yielded 1.6 g. (31.5%) L-$RNH(CH_2)_2CH(NH_2)CO_2H$, m. 255° (from H_2O). *HCl salt of* IV *Et ester* (65.5% from IV with 8% HCl in EtOH), m. 152–3°. I (4 g.) was transformed into 3.3 g. (86.5%) IIA, m. 143–4° (from AcOEt-petr. ether), which in turn was converted to 55.5% *amide* of II, m. 167° (from aq. AcOH). IV with $CHCl_3$ in dioxane gave L-*1-(2-carbobenzyloxyaminoethyl)-2,5-oxazolidinedione*. The hydrazide of II (1.8 g.) in 20 ml. AcOH treated with 10 ml. HCl (1:10), 50 ml. Et_2O, and, with cooling and stirring, 380 mg. $NaNO_2$ in 3 ml. H_2O, the mixt. poured into 50 ml. ice water, the ether layer washed with H_2O to remove the mineral acid, the dried ether soln. added dropwise to $H_2NCH_2CO_2Et$ in $CHCl_3$, the mixt. let stand overnight, the solvents distd. off at 40° *in vacuo*, the residue dissolved in AcOEt, the soln. washed 3 times with HCl (1:5), 3 times with a satd. soln. of Na_2CO_3, and finally twice with 10% Na_2CO_3 soln., dried, evapd. *in vacuo*, and the residue crystd. from aq. EtOH gave 1.5 g. (70.8%) L-$RNHCH_2CH_2CH(NHR)CONHCH_2CO_2Et$ (V), m. 130–1°, also obtained (75%) by heating 0.4 g. IIA with 0.5 ml. $H_2NCH_2CO_2Et$ 5 min. at 135°. V is hydrolyzed with *N* NaOH to 79.5% free *acid*, m. 142–3°. V (500 mg.) in 5 ml. AcOH heated at 60° with a soln. prepd. by mixing 3.1 g. 50% HI with 5.2 g. Ac_2O, the $PhCH_2I$ removed by Et_2O extn., the iodine pptd. from the aq. layer as PbI_2, the Pb ions removed with H_2S, and the soln. evapd. several times to dryness yielded 194 mg. (98.2%) L-$H_2NCH_2CH_2CH(NH_2)CONHCH_2CO_2H$; *dipicrolonate monohydrate*, m. 202–3° (from aq. EtOH). II (1.8 g.) and L-$BuCH(NH_2)CO_2Et$ (from 1 g. of the HCl salt) gave by the azide method 1.95 g. (82%) L-$RNHCH_2CH_2CH(NHR)CONHCHBuCO_2Et$-L (VII), also prepd. by the anhydride method by treating at −5° 2 g. II in 20 ml. $CHCl_3$, 0.9 g. III, and 0.5 g. $MeNC_5H_{10}$ with a $CHCl_3$ soln. of L-$BuCH(NH_2)CO_2Et$ (from 1 g. HCl salt), letting the mixt. stand 14 hrs., and evapg. it *in vacuo* to give 1.05 g. (40%) VII, m. 108°; the free *acid*, m. 155° (from aq. EtOH), treated with HI, gave 88% L-$H_2NCH_2CH_2CH(NH_2)CONHCHBuCO_2H$ [*dipicrolonate*, m. 225–7° (from H_2O)]. L-$RNHCH_2CH_2CH(NHR)CONHCH(CO_2Et)CH_2CH_2CO_2Et$-L, m. 130–1° (from aq. EtOH), prepd. in 70.1% yield by the anhydride method from 4 g. II, 1.75 g. di-Et glutamate-HCl, 1.8 g. III, and 1 g. $MeNC_5H_{10}$, gave by

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71. *dicarbobenzyloxydipeptide*, m. 189–90° (from aq. EtOH), from which was obtained 91.2% L-*2,4-diaminobutyryl-L-glutamic acid monohydrate*, m. 192–3° (from aq. EtOH). L-*RNHCH₂CH₂CH[NHCOCH(NHR)CH₂CH₂NHR-L]CO₂Et*, m. 140–2° (from aq. EtOH), prepd. in 61.8 g. yield by the azide method and in 56.2% yield by the anhydride method, was hydrolyzed quantitatively to the free acid, m. 160–2° (from aq. EtOH), which, hydrogenated in AcOH over 15% Pd-C, yielded 76% L-*H₂NCH₂CH₂CH[NHCOCH(NH₂)CH₂CH₂NH₂-L]CO₂H; picrolonate dihydrate*, m. 202° (from H₂O); *rufianate*, m. 228–7° (from H₂O). The hydrochl. L-*RNHCH₂CH₂CH(NHCOCH₂NHR-L)CO₂Et* (1.7 g., prepd. by the anhydride method) was hydrolyzed to the free acid, m. 142–3° (from aq. EtOH), which, hydrogenated in AcOH over Pd-C, gave 91% L-*H₂NCH₂CH₂CH(NHCOCH₂NH₂)CO₂H* [*rufianate*, m. 213–15° (decompn.) from H₂O]. *RNHCH₂CH₂CH[NHCOCH(NHR)Bu-L]CO₂Et*, m. 66–9° (from aq. EtOH), prepd. in 63% yield by the azide method and in 38% yield by the azide synthesis, was saponif. to 74% free acid, m. 143–5° (from aq. EtOH), which with HI gave 87.5% L-*H₂NCH₂CH₂CH[NHCOCH(NH₂)Bu-L]CO₂H(bis-(2-naphthalenesulfonate)*, m. 190–1° (from H₂O)]. *RNHCH₂CH₂CH[NHCOCH(NHR)CH₂CH₂CO₂Et-L]CO₂Et*, m. 153° (from aq. EtOH), prepd. in 25.5% yield, was saponif. to 84.5% free acid, m. 177–8° (from aq. EtOH), and decarbobenzyloxylated to L-*H₂NCH₂CH₂CH[NHCOCH(NH₂)CH₂CH₂CO₂H-L]CO₂H*, decomp. 192–5°. V was transformed with $N_2H_4.H_2O$ to 77% L-*RNHCH₂CH CH(NHR)CONHCH₂CONHNH₂*, m. 178–9° (from aq. AcOH), which by the azide synthesis yielded 60.5% L-*RNHCH₂CH₂CH[NHCOCH₂NHCOCH(NHR)CH₂CH₂NHR-L]CO₂Et*, m. 151–3° (from AcOEt-petr. ether). This was transformed to 92% corresponding *hydrazide*, m. 202–3° (from aq. AcOH), which with $H_2NCH_2CO_2CH_2Ph.HCl$ gave 44.5% L-*RNHCH₂CH₂CH[NHCOCH₂NHCOCH(NHR)CH₂CH₂NHR-L]CONHCH₂CO₂CH₂Ph*, m. 203–5° (from aq. AcOH). Decarbobenzyloxylation by hydrogenation in AcOH on Pd-C liberated 78% L-*H₂NCH₂CH₂CH[NHCOCH₂NHCOCH(NH₂)CH₂CH₂NH₂-L]CONHCH₂CO₂H; rufianate*, m. 215–17° (from H_2O). IV (4 g.) in 10 ml. $CHCl_3$ treated at −65° with $H_2NCH_2CO_2CH_2Ph$ (from 3.2 g. of its HCl salt), and 1.6 g. $MeNC_5H_{10}$ in 5 ml. $CHCl_3$, and finally with *o*-$C_6H_4(CO)_2NCH_2COCl$ (from 3.2 g. $C_6H_4(CO)_2NCH_2CO_2H$) in 15 ml. $CHCl_3$ gave L-*RNHCH₂CH₂CH[NHCOCH₂N(CO)₂C₆H₄-o]CONHCH₂CO₂CH₂Ph*, m. 230–1° (from aq. AcOH); *Et ester*, prepd. similarly in 44.5% yield, m. 198–9° (from aq. AcOH). IX. Constitution of phalloidine. 2. Bedřich Meloun, Bořivoj Keil, and František Šorm. Czech. Akad. Věd. Prague, Czech.). *Chem. Listy* 47, 1504–10(1953); cf. *C.A.* 47, 3237*b*.—New expts. with *phalloidin* show the sequence of L-threonyl-L-cysteinyl-L-alanyl-L-allohydroxyprolyl in the mol. The following possibilities for the structure of phalloidine are suggested:

OT = hydroxytryptophanyl, TH = threonyl, CY = cysteinyl, AL = alanyl, OP = hydroxyprolyl. The dotted lines show the possible S bridges. DL-*hydroxytryptophan* m. 242°, R_f: H_2O 0.70, BuOH-AcOH-H_2O (4:1:5) 0.34, PhOH contg. 25% H_2O 0.85, BuOH-EtOH-H_2O (4:1:5) 0.48.

M. Hudlický

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Sorm, F., Rychlik, I. "Proteins. XX Specificity of 2, 4 dinitrophenyl-derivatives of alpha-chymotrypsin and trypsin. p. 618. CASOPIS PRO PESTOVANI MATEMATIKY. CZECHOSLOVAK MATHEMATICAL JOURNAL. Vol. 47, no. 4, April 1953, Praha, Czechoslovakia.

SO: Monthly List of East European Accessions, LC., Vol. 3, No. 1, Jan. 1954, Uncl.

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SORM, F.

Synthesis of methylenecycloalkanes. František Šorm and Ilji Beránek (Czech. Akad. Věd., Prague, Czech.). *Chem. Listy* 47, 708-11(1953).—Methylenecycloalkanes were prepd. by the decarboxylation of the corresponding cycloalkenylacetic acids. The acids contg. 5-, 6-, and 7-membered rings were obtained by the condensation of the cyclic ketones with $NCCH_2CO_2H$ (I), the acids with 8- and 9-membered rings by the Reformatskiĭ synthesis with $BrCH_2CO_2Et$ (II). *Methylenecyclopentane* b. 72°, d_{20} 0.7852, n_D^{20} 1.4344. A mixt. of 3.2 g. cyclohexylidene- and 1-cyclohexenylacetic acids (cf. *C.A.* 34, 3676[8]) gently heated at approx. 100° in an app. connected to a Dry Ice trap, and the crude product distd. with Na gave 1.8 g. (81%) methylenecyclohexane, b. 98°, d_{20} 0.8043, n_D^{20} 1.4512. *Cycloheptanone* (5 g.), 12 g. I, and 12 g. $C_5H_{11}N$ heated 2 hrs. at 100-5°, and the mixt. extd. with Et_2O, the ext. washed with 10% H_2SO_4, 10% aq. Na_2CO_3, and H_2O, dried, and distd. *in vacuo* gave 2.7 g. (45%) *cycloheptylideneacetonitrile*, b_{16} 105-12°, which, refluxed 27 hrs. with 2.4 g. KOH in 20 ml. H_2O, gave a mixt. of 1.9 g. (61.5%) *cycloheptylidene-* and *1-cycloheptenylacetic acids*, b_{15} 143-7°, b_{16} 140°. Decarboxylation of this mixt. yielded 70% *methylenecycloheptane*, b. 133°, d_{20} 0.8257, n_D^{20} 1.4585. Cyclooctanone (3 g.), 4 g. II, 1.57 g. Zn shavings, 10 ml. C_6H_6, and 8 ml. PhMe heated to 100° to start the reaction, then refluxed 2 hrs. at 105°, cooled, shaken with 10% H_2SO_4, the org. layer sepd., stripped of the solvents, and the residue (4 g.) treated 2 hrs. with dry HCl at 105°, gave, after distn., 2.15 g. (45%) *Et cyclooctylideneacetate* (III), b_{20} 132-7°, b_{16} 135°. Hydrolysis of 2 g. III with 0.25 g. Na in 25 ml. 90% EtOH gave, after refluxing 4 hrs., a mixt. of 1.35 g. (78%) *cyclooctylidene-* and *1-cyclooctenylacetic acids*, b_{20} 165°. Decarboxylation of this mixt. gave 61% *methylenecyclooctane*, b. 155°, d_{20} 0.8485, n_D^{20} 1.4082. Cyclononanone (6.8 g.), 8.1 g. II, and 3.2 g. Zn heated in 19 ml. C_6H_6 and 18 ml. PhMe 2 hrs. at 110-20° and 8 hrs. at 80-90°, gave 2.5 g. (24.5%) *Et cyclononylideneacetate*, b_{15} 155°. Decarboxylation of the corresponding *acid*, $b_{0.5}$ 131-3° (58%), gave 62% *methylenecyclononane*, b. 169°, d_{20} 0.8652, n_D^{20} 1.4808.

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SORM, F.

FAJKOS, J., SORM, F.

"On Steroids. VII Synthesis of 3-Hydroxyandrosta 5, 16-Diene-16-Carboxylic Acid" p. 712, (CHEMICKE LISTY, Vol. 47, no. 5, May 1953, Praha, Czechoslovakia).

SO: Monthly List of East European Accessions, LC, Vol. 2, No. 11, Nov. 1953, Uncl.

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SORM, FRANTISEK

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Terpenes. L. Contribution to the constitution of elemol. Vladimír Sýkora, Vlastimil Herout, Josef Pliva, and František Sorm (Czech. Akad. Věd, Prague, Czech.). *Chem. Listy* 47, 889-98(1953); *Collection Czechoslov. Chem. Communs.* 19, 124-34(1954)(in English); cf. *C.A.* 47, 8704*h*.—Comparison of the infrared spectra of *elemane* and of synthetic 1,1-dimethyl-2-*sec*-butyl-4-isopropylcyclohexane (I) contradicts the Ruzicka- van Veen formula (*C.A.* 24, 607) of elemol (II). Dehydrogenation of *tetrahydroelemene* (III) to 1-methyl-2,4-diisopropylbenzene (IV) proves that I has the skeleton of 1-methyl-1-ethyl-2,4-diisopropylcyclohexane (V). II isolated from the distn. residues of citronella oil by vacuum distn. was chromatographed and purified through its phenylurethan, m. 111-12°, to give pure II, m. 52.5-3.5°. Dehydration of 40 g. *tetrahydro*-II (obtained by hydrogenation of II over PtO_2) by heating with 220 g. 85% HCO_2H 1 hr. on the steam bath gave, after chromatography and distn., 31 g. III, b_{12} 128-30°. Heating 2.1 g. III and 0.95 g. S 7 hrs. at 180°-240° gave 0.95 g. IV, b_{10} 100-5°, d_{20} 0.8563, n^{20}_D 1.4945. Quant. ozonization of II indicated 1.89 double bonds. I was synthesized as follows: refluxing 21 g. 2,2-dimethylcyclohexanone in 210 ml. CCl_4 with 37.2 g. *N*-bromosuccinimide under ultraviolet illumination 40 min. gave 37 g. 2,2-dimethyl-6-bromocyclohexanone, m. 55.5-7° (from petr. ether); the dehydrobromination of which (35 g.) with 250 ml. collidine gave 11.9 g. 2,2-dimethyl-5-cyclohexenone (VI), b. 175-82° (decompn.). Refluxing 1 hr. 11.9 g. VI with a soln. obtained from 10.7 g. Mg and 31.4 g. iso-PrCl in Et_2O gave, by way of the *semicarbazone*, m. 157-8°, 2.22 g. *2,2-dimethyl-5-isopropylcyclohexanone*, (VII), $b_{0.4}$ 103-5.5°, d_{20} 0.8982, n^{20}_D 1.4340. VII (1.03 g.) in petr. ether refluxed 1 hr. with a soln. of *sec*-BuLi made from 1.5 g. Li and 12 ml. *sec*-BuCl, gave, after chromatography, 0.6 g. *1-sec-butyl-2,2-dimethyl-5-isopropylcyclohexanol*, $b_{0.4}$ 98-9°, the dehydration of which with HCO_2H yielded *1,1-dimethyl-2-sec-butyl-4-isopropylcyclohexene* (VIII), b_{12} 105-8°. Hydrogenation of VIII in AcOH over PtO_2 gave I, d_{20} 0.8412, n^{20}_D 1.4601. Dehydrogenation of VIII with S (7 hrs. at 180-240°) gave a compd. distg. at 27 mm., at bath-temp. 120-91°, [illegible] *propylbenzene* (IX) was synthesized as follows: carvone (n^{20}_D 1.4990)(2.3 g.) and *sec*-BuLi from 2.4 g. Li and 14 g. *sec*-BuCl refluxed 1 hr. in petr. ether gave 2.5 g. crude *1-sec-butyl-2-methyl-5-isopropenyl-2-cyclohexenol*, b_2 94-13°, which was aromatized by boiling with HCO_2H to 0.25 g. *1-methyl-2-sec-butyl-4-isopropylbenzene* (X), $b_{0.4}$ 98-105°, d_{20} 0.8614, n^{20}_D 1.4904. The same compd. was obtained as follows: carvomenthone (3 g.) refluxed 75 min. with *sec*-BuLi (from 1.5 g. Li and 12 ml. *sec*-BuCl) in petr. ether yielded, after chromatography, *1-sec-butyl-2-methyl-5-isopropylcyclohexanol*, b_2 87-91°. This heated with 90% HCO_2H gave *1-sec-butyl-2-methyl-5-isopropylcyclohexene*(?), b_{12} 102-15°, which was dehydrogenated with S at 180-270° to 0.93 g. X, b_{12} 103-6°, d_{20} 0.8627, n^{20}_D 1.4926. *1-Methyl-2,4-diisopropylbenzene* (XI) was synthesized as follows: carvomenthone (d_{20} 0.9124, n^{20}_D 1.4564)(3.1 g.), refluxed 90 min. with iso-PrLi, prepd. from 2.8 g. Li and 19 ml. iso-PrCl, gave 3.5 g. *3-methyl-1,5-diisopropylcyclohexanol*, b_1 70-81°. This (2 g.) was dehydrated with HCO_2H to 1.34 g. of the compd., $b_{0.4}$ 86-90.5° which yielded, by heating 6 hrs. with S at 180-240°, 0.7 g. XI, b_{12} 104-8°, d_{20} 0.8673, n^{20}_D 1.4946. LI. The composition of the chamazulene. Preliminary communication. F. Sorm, J. Novák, and V. Herout. *Chem. Listy* 47, 1097-8(1953); *Collection Czechoslov. Chem. Communs.* 18, 527-9(1953)(in English).—On the basis of all known data on the elementary analyses of chamazulene and its derivs., on the basis of oxidation products, and of infrared spectra detns., the correct formula for chamazulene, *1,4-dimethyl-7-ethylazulene*, $C_{14}H_{16}$, is suggested. LII. The structure of laserpitine. František Sorm, Miroslav Holub, and Vlastimil Herout. *Chem. Listy* 47, 1499-1503(1953); *Collection Czechoslov. Chem. Communs.* 19, 135-40(1954)(in German).—*Laserpitine* (I), the bitter principle of the root of *Laserpitium latifolium*, is a diester of angelic acid and *laserol* (II) which seems to be a bicyclic tetrahydroxy ketone. Out of the 6 O atoms, 3 are bound to three neighboring C atoms, and 2 to two adjacent C atoms in some other part of the mol. I, isolated by petr. ether extn., m. 117°, $[\alpha]^{20}_D$ 119°, mol. wt. (Rast) 445, hydrogenated over PtO_2 in AcOH gave *tetrahydrolaserpitine*, m. 83-5° (from petr. ether). Sapon. of 2.8 g. I with 6.2 ml. 1.2 *N* $Ba(OMe)_2$ in 10 ml. MeOH at room temp. gave,

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di-Me norcaryophyllenate, b_{10} 100–2°, 70 g. *di-Me caryophyllenate*, b_{10} 120–1.5°, and 40 g. *di-Me homocaryophyllenate*, b_{10} 130–2°, n_D^{20} 1.4493, $[\alpha]_D^{20}$ 33.06. Refluxing 37.4 g. II 4 hrs. with 10 ml. MeOH and a few drops of H_2SO_4 gave 12.8 g. (30.6%) *Me II homocaryophyllenate*, b_{10} 186° (III). III (3.2 g.) was treated with $SOCl_2$ in 30 ml. C_6H_6, the solvent evapd. *in vacuo*, the ester acid chloride dild. with C_6H_6 and added to a benzene soln. of 1.25 equiv. Me_2Cd to give, after heating 10 min., decompn. with 10% H_2SO_4, and ether extn., 2.60 g. (83%) *Me 3-(2,2-dimethyl-4-acetylcyclobutyl)-propionate* (IV), b_{10} 132–8°; *semicarbazone* of the *free keto acid*, m. 165–6°. To 14 g. $HgCl_2$-activated Zn in 70 ml. C_6H_6 were added 6.5 g. IV and 14 g. $BrCH_2CO_2Me$ in 30 ml. C_6H_6, the mixt. boiled 10 min, decompd. with 10% H_2SO_4 and extd. with Et_2O, the residue dehydrated by boiling 2 hrs. with 40 ml. Ac_2O to give, after chromatography, 2.43 g. *Me β-[2-(2-carbomethoxyethyl)-3,3-dimethylcyclobutyl]crotonate*, $b_{0.14}$ 110–17°, which hydrogenated over PtO_2 in AcOH gave Me β-[2-(2-carbomethoxyethyl)-3,3-dimethylcyclobutyl]butyrate, 1.18 g., b_{10} 156–64°; *β-[2-(2-carbomethoxyethyl)-3,3-dimethylcyclobutyl]butyric acid*, $b_{0.4}$ 190° (bath temp.) (obtained by alk. sapon. of the ester) (0.65 g.) distd. with 0.65 g. Fe dust and 0.15 g. $Ba(OH)_2$ gave 260 mg. (54%) *2,8,8-trimethylbicyclo[0.2.5]nonan-4-one* (V), b_{10} 130° (bath temp.); *semicarbazone*, m. 176–7°. Another prepn. started with IV (3.53 g.) which was refluxed 5 hrs. with 1.88 g. $NCCH_2CO_2Et$, 1.2 g. AcOH, 1.2 g. AcONa and 5 ml. C_6H_6 to give 2.31 g. (45%) *Et α-cyano-β-[2-(2-carbomethoxyethyl)-3,3-dimethylcyclobutyl]crotonate*, $b_{0.4}$ 134–6°, which hydrogenated over Pd on $CaCO_3$ yielded 2.15 g. *Et α-cyano-β-[2-(2-carbomethoxyethyl)-3,3-dimethylcyclobutyl]butyrate*, $b_{0.4}$ 160–3° (VI). Heating 1.98 g. VI 15 hrs. with 10 ml. HCl and 5 ml. AcOH yielded 1.53 g. (98%) *β-[2-(2-carboxyethyl-3,3-dimethylcyclobutyl]butyric acid*, $b_{0.4}$ 180°, which yielded by cyclization 48% V, b_{10} 112–14°. The *semicarbazone* of V (360 g.), 450 ml. Na and 9 ml. EtOH were heated 20 hrs. at 200°, the mixt. dild. with H_2O and extd. with Et_2O, and the residue after evapn. of the Et_2O, was chromatographed to yield 105 mg. (41%) I, b_{10} 95–105°. I was also obtained by the Kishner reduction of the *semicarbazone* of IIa in 50% yield. I from the 2 [illegible] of [illegible] had d_{20} 0.8331, 0.3337; and [illegible] 1.4621, 1.4628; the infrared spectrum of I is given. LIV. The structure of lactarazulene and lactaroviolin. František Šorm, Věra Benešová, and Vlastimil Herout. *Ibid.* 1876–81.—A new structure for *lactarazulene* (from *Lactarius deliciosus*) (I), $C_{15}H_{18}$, was confirmed as 7-isopropenyl-1,4-dimethylazulene by partial hydrogenation, which transformed I to guaiazulene (II). *Lactaroviolin* (III) also belongs to the guaiane (IV) type. Ozonization of I showed the presence of methylene double bond. Hydrogenation of I in EtOH over Pd on C, deactivated with quinoline vapors, gave II, *trinitrobenzene compd.*, m. 151°. III, m. 57.5–8° (from petr. ether-C_6H_6) which showed the presence of 1 CH_3 group, gave, by hydrogenation over PtO_2 in AcOH, IV, $C_{15}H_{18}$, d_{20} 0.8810, n_D^{20} 1.4811, and an alc., $C_{15}H_{28}O$, b_{15} 180–5° (bath temp.). Partial hydrogenation over deactivated Pd gave dihydrolactaroviolin, $b_{0.05}$ 130–5° (bath-temp.). Infrared spectra of I and IV are given. LVI. Paper chromatography of azulenes. Otto Knessl and Alice Vlastiborová. *Ibid.* 48, 212–16 (1954).—The analysis of trialkylazulenes is based on different R_F values obtained by paper chromatography with petr. ether as stationary and 35–70% H_3PO_4 as mobile phases. The R_F values with 35, 45, 50, 55, 60, 65, and 70% H_3PO_4, resp., are listed for *S-guaiazulene* (0.0, 0.08, 0.30, 0.43, 0.68, 0.87, 1.0), *setiazulene* (0.0, 0.02, 0.13, 0.23, 0.47, 0.65, 1.0), *chamazulene* (0.03, 0.23, 0.47, 0.65, 0.79, 0.90, 1.0), and values for 50 and 55% H_3PO_4, resp., are given for *Se-guaiazulene* (0.56, 0.80), *isoguaiazulene* (0.50, 0.72), and *lactarazulene* (0.02, 0.08). The chromatograms were developed with I_2O or dry NH_3. LVII. Identity of lindazulene with chamazulene. F. Šorm, V. Herout, and K. Takeda. *Ibid.* 281–3; *Collection Czechoslov. Chem. Communs.* 19, 186–8(1954)(in English).—Identity of lindazulene (*C.A.* 34, 917; 48, 7716g) with chamazulene(1,4-dimethyl-7-ethylazulene) was proved by mixed m.ps. of the trinitrobenzene compds. and by comparison of visible and ultraviolet spectra. The partial synthesis of lindazulene (*Pharm. Bull. Japan* 1, 241(1953)) is, at the same time, proof of the correct structure of chamazulene as proposed by Šorm, *et al.* (see 5th preceding abstr.). M. Hadlicka

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VLADIMIR SYKORA, VLASTIMIL HEROUT, et al.

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Substances of Artemisia absinthium and isolation of crystalline prochamazulenogen. Vlastimil Herout and František Šorm (Czech. Akad. Věd, Prague, Czech.). *Chem. Listy* 47, 1041-52(1953); *Collection Czechoslov. Chem. Communs.* 18, 854-69(1953)(in English).—From the petr. ether ext. of *A. absinthium*, a hydroxylactone $C_{15}H_{20}O_3$ has been isolated which is believed to be a compd. from which originate the chamazulenogenic substances (*pro-chamazulenogen*) (I). Extn. of the dry drug (760 g.) with petr. ether gave 7.1% of an ext. contg. 1.48% *chamazulene* (II). The ext. dissolved in 2 l. petr. ether extd. with 8 250 ml. portions of 50% EtOH, washed three times with 300 ml. 3% NaOH, dried and evapd. gave 42 g. of a waxy substance (fraction *A*). Acidification of the alk. washings with dil. H_2SO_4 and extn. with Et_2O gave 1.8 g. dark-green acids. [illegible] of the EtOH from the aq.-alc. exts. and extn. with Et_2O yielded 10.5 g. (fraction *B*), contg. 5.44% II. Chromatography of fraction *A* (29 g.) gave 10 g. $C_{20}H_{30}$, m. [illegible] (after subl. 180°/0.1 mm.), waxy carotenoid compds., (0.8 g.) ester with sapon. no. 97.5 ($C_{30}H_{70}O_2$ acid), a *compd.* m. 108° (from AcOEt and petr. ether), a mixt. of (3.55 g.) alcohols $C_{24}H_{50}O$ and $C_{26}H_{54}O$ (III), m. 74-5° (from AcOEt and Me_2CO), a mixt. of 30 mg. of *phytosterols*, m. 139-41° ($C_{27}H_{46}O$) (*acetyl-deriv.*, m. 117°, from EtOH), and *palmitic acid*, m. 61° (approx. 1 g.). Fraction *B* deposited 1.1 g. $C_{20}H_{30}O_3$, m. 165.5° (from C_6H_6-EtOH). Chromatography of the rest (9.4 g.) yielded 0.5 g. III, 150 mg. of a *compd.*, m. 114°, 0.45 g. *absinthin*, m. 254-7°, and 850 mg. I, m. 129-32° (decompn.) (from C_6H_6), sol. in EtOAc, Me_2CO, Et_2O, and EtOH, slightly in sol. petr. ether, CS_2, CCl_4, H_2O. Hydrogenation of I in AcOH over PtO_2 gave, after chromatography, $C_{15}H_{20}O_2$, $b_{0.5}$ 160-5° (bath temp.), $C_{15}H_{20}O_3$, $b_{0.001}$ 130° (bath temp.), and a *compd.* m. 108°. Sapon. of I with 5% alc. KOH under standard conditions yielded upon decarboxylation 18.3% II.

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[illegible], F.

[illegible], [illegible]; [illegible].
"Quinolizidine Alkaloids. Pt. 3. Synthesis of Three Isomeric 3-(4-Hydroxyl)-Quinolizidines." p. 1093. (Chemicke Listy. Vol. 47, No. 7, July 1953, Prague.)

Sc: Monthly List of East European Accessions, Vol. [illegible], No. [illegible], Library of Congress, March [illegible], Uncl.

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[illegible]

[illegible], F.; [illegible], J.; [illegible], [illegible].
"Terpenes. Pt. [illegible]. The Composition Of Chamaulene; A Preliminary Communication." p. [illegible]. (Chemicke Listy. Vol. 47, No. 7, July 1953, Praha.)

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SO: Monthly List of East European Accessions, Library of Congress, March 19[illegible], Uncl.

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SOR M, F.

Synthesis of 1-azaniumtricyclo[0.3.3.3]undecane bromide. František Sorm and Jiří Beránek (Czech. Akad. Věd. Prague, Czech.). *Chem. Listy* 47, 1359-65(1953).—An entirely sym. tricyclic compd. contg. a central quaternary N in the pos. ion, *1-azaniumtricyclo[0.3.3.3]undecane* (I), was prepd. by two similar methods, both starting from $O_2NC(CH_2CH_2CN)_3$ (Ia). Ia, m. 114°, prepd. in 49% yield (Bruson and Reiner, *C.A.* 37, 1331[1]) (with $[PhMe_3N]$-OEt as catalyst, gave by hydrolysis 77% $O_2NC(CH_2CH_2CO_2H)_3$, m. 180°, which yielded by azeotropic esterification) (catalyst p-$MeC_6H_4SO_3H$) 86.4% $O_2NC(CH_2CH_2CO_2Et)_3$ (II), $b_{0.05}$ 155-60°, n_D^{20} 1.4629. Hydrogenation of 36 g. II over 3 g. Raney Ni at 110° and 110 atm. gave, after 1 hr., 25.5 g. (89.7%) *5,5-bis(β-carbethoxyethyl)-2-pyrrolidone* (III), m. 46° (from Et_2O), $b_{0.4}$ 201°. Heating III (10 g.) 5 hrs. at 205-10° and 12 mm. yielded 6.6 g. (78.8%) *8-(β-carbethoxyethyl)-3,5-dioxopyrrolizidine* (IV), m. 103° (from EtOH or dioxane), $b_{0.3}$ 220-4°. A soln. of 8.3 g. IV in 130 ml. dioxane was dropped during 7 hrs. into a suspension of 4 g. $LiAlH_4$ in 50 ml. dioxane heated to 70-80°, the mixt. allowed to stand at room temp. overnight, decompd. with 5 ml. H_2O, then with 12 ml. 20% NaOH, filtered, the ppt. washed with 100 ml. dioxane, and the filtrate evapd. to give, on distn., 3 g. (51%) *8-(γ-hydroxypropyl)pyrrolizidine* (V), b_{11} 132-3°, d_{20} 1.0354, n_D^{20} 1.4956 (*picrate*, m. 146-7°), and 1.9 g. (29.2%) *2,2-bis(γ-hydroxypropyl)pyrrolidine* (VI), $b_{0.4}$ 172-6°, m. 76-7° (from AcOEt). Heating 2.3 g. V with 30 ml. 27% HBr in AcOH 11 hrs. at 100° (autoclave) yielded 4 g. (94%) *HBr salt of 8-(γ-bromopropyl)pyrrolizidine* (VII), m. 133° (from Me_2CO). Treating 2.3 g. VII in 60 ml. H_2O with Ag_2O prepd. from 3.5 g. $AgNO_3$, filtering off the AgBr, and mixing the soln. with picric acid gave 2.7 g. (96.5%) *picrate of* I, m. 318°. Mixing 1.7 g. I picrate in 10 ml. H_2O with 12 ml. 48% HBr and removing the picric acid by ether extn. yielded 0.9 g. (87%) I bromide, m. above 350° (from Et_2O-Me_2CO). Adding 9.5 g. III in 130 ml. dioxane during 2 hrs. to 3.8 g. $LiAlH_4$ in 50 ml. dioxane at 70-80°, continuing the heating for 2 hrs., and decomp. the mixt. with 5 ml. H_2O and 15 ml. 20% NaOH yielded 5.1 g. (81.6%) VI, $b_{0.4}$ 176-7°. VI (4 g.) heated in an autoclave 14 hrs. at 100° with 50 ml. 31% HBr in AcOH yielded 7.3 g. (87%) HBr salt of *2,2-bis(γ-bromopropyl)pyrrolidine* (VIII), m. 95-6° (from AcOEt). Treating 5.5 g. VIII in 150 ml. H_2O with Ag_2O prepd. from 11 g. $AgNO_3$ gave *hydroxide* of I which yielded, on distn., 58.5% *8-allylpyrrolizidine* (IX), b. 191-3°, b_{14} 72°, d_{20} 0.9323, n_D^{20} 1.4812 (*picrate*, m. 163°). IX was hydrogenated to *8-propylpyrrolizidine*, b. 190°, n_D^{20} 1.4646 (*picrate*, m. 156-6°). I bromide crystallizes from EtOH in the hexagonal system. Also in *Collection Czechoslov. Chem. Commun.* 19, 298-303(1954) (in English).

(I)

M. Hudlický

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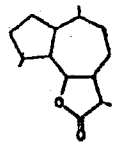
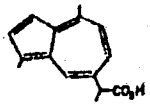
SORM, F.

CZECH

Chamazulene precursor from chamomile (Matricaria chamomilla L.). Z. Cekan, V. Herout, and F. Šorm. (Czech. Acad. Sci., Prague). *Chemistry & Industry* 1954, 684-5; cf. *C.A.* 49, 907c.—Cryst. I, $C_{11}H_{18}O_4$, m. 158-60° (decompn.), having 2 double bonds, an acetyl and hydroxyl group of unassigned position has been isolated in cryst. form from *Matricaria chamomilla* L. as a precursor of chamazulene (II). The ultraviolet absorption spectrum showed a max. at 243 μ, log E 4.32. On hydrogenation



(I)



(III)

2.9 equivs. of H were absorbed and 2, probably stereoisomeric, lactones, $C_{11}H_{18}O_4$, m. 115.5° and 122-3°, were isolated. Steam distn. of I gave 70-75% II by the elimination of 3 HO groups and subsequent decarboxylation. III is proposed as an intermediate in this reaction (Jung and Wendler, *C.A.* 47, 10800g) and the name guaiazulenic acid is suggested. The name guaianolides is proposed for compds. contg. a lactone group on a guaiane skeleton. The antiphlogistic activity of I has been found to be at least equal to that of II.

M. M. Bender

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6

SORM, F.

CZECH

Presence of 1,7-dimethyl-4-isopropyldecahydronaphthalene in the carbon skeleton of lasserpetine. F. Sorm, M. Holub, and V. Herout (Czech. Acad. Sci., Prague). *Chemistry & Industry* 1954, 955.—The C skeleton of lasserpetine is established by treating dehydrolaserol with HI and subsequent dehydrogenation with S, which yielded a naphthalenic hydrocarbon. The consts. of the free hydrocarbon, the picrate, and styphnate correspond to those of 1,7-dimethyl-4-isopropylnaphthalene and its appropriate derivs.

George B. Pleat

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6

SORM, F.

The structure of lactaroviolin. F. Šorm, V. Benešová, J. Krupička, V. Šneberk, L. Dolejš, V. Herout, and J. Sicher (Czech. Acad. Sci., Prague). *Chemistry & Industry* 1954, 1511-12.—The structure 1-formyl-4-methyl-7-isopropenylazulene (I) (Heilbronner, *Chimia* 8, 97(1954); Plattner, *et al.*, *C.A.* 49, 14726*h*) for lactaroviolin is further supported by proof (*C.A.* 48, 12708*a*) of the guaiane (perhydroguaiazulene) skeleton. Comparison of the polarographic reduction potentials of lactaroviolin and its dihydro-deriv. excludes 1,4-dimethyl-7-(β-acrylaldehyde)azulene. Reaction of lactaroviolin with MeMgI gives the unstable 1-methylmethylol-4-methyl-7-isopropenylazulene, which on hydrogenation (Pd-C; deactivated with quinoline) affords *1-ethyl-4-methyl-7-isopropylazulene; trinitrobenzene addn. compd.*, $C_{22}H_{22}O_6N_3$, m. 111°, not depressed with synthetic material, infrared spectra of the natural and synthetic azulenes are identical. The isomer, *4-ethyl-1-methyl-7-isopropylazulene trinitrobenzene adduct*, $C_{22}H_{22}O_6N_3$, m. 117°, is depressed with the deriv. from lactaroviolin. The azulenes were synthesized by methods previously reported (*C.A.* 47, 4313*c* and 4314*h*). *Chamazulene* has recently been synthesized by these methods.

F. R. Mumford

CH

(6)

MGT

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6

LAUCIKOVA, O.; JAKUBOVIC, A.; KEIL, B.; SORM, F.

Viruses I; isolation and chemical properties of Rous sarcoma.
Chekh. biol. 3 no.5:298-307 Nov 54.

1. Institut organicheskoy khimii ChSAN, organicheskaya biokhimiya, Praga.

(VIRUSES,
Rous sarcoma virus, isolation & chem.)
(NEOPLASMS, experimental,
Rous sarcoma virus, isolation & chem.)
(SARCOMA, experimental,
Rous sarcoma virus, isolation & chem.)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6

SORM, F.; MALEK, I.

Flow cultivation of yeast ferments. p. 379
CESKOSLOVENSKA BIOLOGIE, Vol. 3, No. 6, Nov. 1954

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4, No. 9 Sept. 1955
Uncl.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6

SHORM, F.

USSR/ Scientific Organization - Czechoslovakia

Card 1/1 : Pub. 124 - 12/24

Authors : Shorm, F., Academician, Chief Secretary of the Acad. of Sc. Czechoslovakia

Title : The first year of the Czechoslovakian Academy of Sciences

Periodical : Vest. AN SSSR 9, 65-69, Sep 1954

Abstract : Progress report on the activities of the Czechoslovakian Academy of Sciences during its first year of existence is presented.

Institution : Academy of Sciences, Prague, Czechoslovakia

Submitted : ...

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6

FAJKOS, J.; SORM, F.

Steroids. Part 7. Synthesis of 3 β-hydroxyandrosta-7,16-diene-16-carboxylic acid [in Russian with summary in English]. Sbor.Chekh.khim.rab. 19 no.1:91-97 F '54. (MLRA 7:6)

1. Department of Natural Products, Institut of Organic Chemistry Czechoslovak Academy of Science, Prague. (Acids, Organic) (Androstadiene)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6

RATUSKY, J.; SORM, F.

Alkaloids derived from quinolizine. Part 3. Synthesis of three stereoisomeric 3-(α-piperidyl)-quinolizidines [in Russian with summary in English]. Sbor.Chekh.khim.rab. 19 no.1:107-117 F '54. (MLRA 7:6)

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

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6

SYKORA, V.; HEROUT, V.; PLIVA, J.; SORM, F.

Terpenes. Part 50. Contribution to the constitution of elemol [in English with summary in Russian]. Sbor.Chekh.khim.rab. 19 no.1:124-134 F '54. (MLRA 7:6)

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

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6

SORM, F.

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

Terpenes. Part 52. Constitution of laserpitine [in German with summary in Russian]. Sbor.Chekh.khim.rab. 19 no.1:135-140 F '54. (MLRA 7:6)

1. Otdeleniye prirodnykh veshchestv, Institut organicheskoy khimii Chekhoslovatskoy Akademii nauk, Praga. (Laserpitine)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6

[illegible], F.; [illegible], O.; [illegible], R.

"Amino Acids and Peptides. IX. Constitution of the Peptide Phalloidine. II." p. 153, (COLLECTION OF CZECHOSLOVAK CHEMICAL COMMUNICATIONS. SBORNIK CHEKHOSLOVATSKIKH KHIMICHESKIKH RABOT, Vol. 19, No. 1, Feb. 1954, Praha, Czechoslovakia)

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4 No. 5, May 1955, Uncl.

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6

SORM, F.

MELOUN, B.; KEIL, B.; SORM, F.

Amino acids and peptides. Part 9. Constitution of the peptide phalloidine; part 2 [in German with summary in Russian]. Sbor.Chekh.khim.rab. 19 no.1:153-161 F '54. (MLRA 7:6)

1. Otdeleniye organicheskoy biokhimii, Institut organicheskoy khimii Chekhoslovatskoy Akademii nauk, Praga. (Phalloidine)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6

SORM, F.

RYCHLIK, I.; SORM, F.

Proteins. Part 20. Specificity of dinitrophenyl derivatives of α-chymotrypsin and of trypsin [in Russian with summary in English]. Sbor.Chekh. khim.rab. 19 no.1:162-166 F '54. (MLRA 7:6)

1. Department of Biochemistry, Institute of Organic Chemistry, Czechoslovak Academy of Science, Prague. (Trypsin)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6

Sorm, Frantisek

Inhibitory effect of chloramphenicol on the formation of some enzyme systems of Escherichia coli. František Šorm and Dezider Grünberger (Czech. Acad. Sci., Prague). *Collection Czechoslov. Chem. Communs.* 19, 167-73(1954)(in English).—See *C.A.* 48, 4044h. E. J. C.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6

SORM, F.

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

Terpenes. Part 54. Identity of lindazulene and chamazulene [in English with summary in Russian]. Sbor.Chekh.khim.rab. 19 no.1:186-188 F '54. (MLRA 7:6)

1. Department of Natural Substances, Institute of Organic Chemistry, Czechoslovak Academy of Science, Prague and Research Laboratory, Shionogi & Co., Imafuku, Amagasaki, Hyogo-ken, Japan.
(Lindazulene) (Chemazulene)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6

SORM, F.; BERANEK, J.

Synthesis of 1-azoniatricyclo-(3,3,3,0)-undecane bromide [in English with summary in Russian]. Sbor.Chekh.khim.rab. 19 no.2:298-304 Ap '54. (MLRA 7:6)

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

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6

SORM, F.

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

Studies in the chloramphenicol series. Part 7. The side reactions in the reduction of dehydrochloramphenicol [in English with summary in Russian]. Sbor.Chekh.khim.rab. 19 no.2:317-329 Ap '54. (MLRA 7:6)

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

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6

SORM FRANTISEK

CZECH

Quinolizine alkaloids. IV. A new synthesis of (±)-lupinine, (±)-epilupinine, (±)-3-lupinine, and (±)-3-epilupinine. Josef Ratusky and František Šorm (Czech. Acad. Sci., Prague). Collection Czechoslov. Chem. Commun. 19, 340-8(1954)(in Russian).—See C.A. 49, 8356a. E. J. C.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6

SORM, F.

FAJKOS, J.; SORM, F.

On steroids. Part 9. Synthesis of 3α-hydroxy-16-ketoandrostane and of 3,16-diketoandrostene-(4) [with summary in English]. Sbor.Chekh.khim.rab. 19 no.2:349-356 Ap '54. (MLRA 7:6)

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

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6

Sorm, František

Terpenes. LIV. The structure of lactarazulene and lactaroviolin. František Sorm, Věra Benešová, and Vlastimil Herout (Czech. Acad. Sci., Prague). *Collection Czechoslov. Chem. Communs.* 19, 357-63(1954)(in German).—See C.A. 48, 12708e. E. L. C.

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CZECH

Steroids. X. Dimethylamino derivatives of allopregnane. Jiří Joska, Václav Černý, and František Šorm (Inst. Org. Chem., Czech. Acad. Sci., Prague). Collection Czechoslov. Chem. Communs. 19, 551-8(1954)(in English).—See C.A. 49, 358d. E. J. C.

B I

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6

SORM, FRANTISEK

CZECH

V Terpenes. LIII. Synthesis of 2,8,8-trimethylbicyclo-(5,2,0)-octane: proof of the constitution of β-caryophyllene. Ladislav Dolejš and František Sorm (Czech. Acad. Sci., Prague). *Collection Czechoslov. Chem. Communt.* 19, 509-65(1954)(in English).—See *C.A.* 48, 12707*i*. B. J. C.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6

SORM, FLAVLIDER

[redacted]

CZECH

Terpenes. LV. Synthesis of elemane (1-methyl-1-ethyl-2,4-diisopropylcyclohexane. Vladimir Šorm, Jiří Černý, Vlastimil Herout, and František Sorm (Czech. Acad. Sci., Prague). Collection Czechoslov. Chem. Communs. 19, 563-9(1954)(in English).—See C.A. 49, 1855i. R. J. C.

3

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[illegible], F., and others.

"Terpenes. LVIII. Total Synthesis of 1,1,4,8,-Tetramethylcycloundecane; Proof of the Eleven-Membered Ring in Humulene. In English." p. 570, (COLLECTION OF CZECHOSLOVAK CHEMICAL COMMUNICATIONS. SBORNIK CHEKHOSLOVATSKIKH KHIMICHESKIKH RABOT, Vol. 19, No. 3, June 1954, Praha, Czechoslovakia)

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4 No. 5, May 1955, Uncl.

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6

[illegible], F.; [illegible], Z.

"Effect of Aconitine on the Metabolism of Brain Tissue." p. 58[illegible], (COLLECTION OF CZECHOSLOVAK CHEMICAL COMMUNICATIONS. SBORNIK CHEKHOSLOVATSKIKH KHICHESKIKH RABOT, Vol. 19, No. 3, June 1954, Praha, Czechoslovakia)

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4 No. 5, May 1955, Uncl.

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6

[illegible]; FAJKOS, J.

[illegible] (Collection of Czechoslovak Chemical Communication. Praha. Vol. 19, no. 4, Aug. 1954) East

[illegible] (EAI), 16, Vol. [illegible], No. [illegible],

[illegible]

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6

[illegible]; CEKAN, Z.; [illegible]OUT, V.

[illegible] (Collection of Czechoslovak Chemical Communication. Praha. Vol. 19, no. 4, Aug. 1954) East

[illegible]

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SERM 1

[illegible]; KEIL, [illegible]; KNESSLOVA, V.

[illegible]

(Collection of Czechoslovak Chemical Communication. Praha. Vol. 19, no. 4, Aug. 1954)

[illegible] East [illegible]

[illegible]

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6

Sorm, F.

CZECH

Proteins. XXV. Chemical structure of proteins. František Sorm. *Collection Czechoslov. Chem. Commun.* 19, 1000-9(1954)(in Russian).—See *C.A.* 48, 13747*f*. XXVI. Photometric analysis of protein hydrolyzates. Bořivoj Keil. *Ibid.* 1009-17.—See *C.A.* 48, 13549*i*. XXVII. Comparative study of the acidic peptide fractions from partial hydrolyzates of chymotrypsinogen and trypsinogen. Bořivoj Keil and František Sorm. *Ibid.* 1018-31.—See *C.A.* 48, 13747*f*.

E. J. C.

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6

[illegible]; KEIL, B.

[illegible] (Collection of Czecho-slovak Chemical Communication. Praha. Vol. 19, no. 5, Oct. 1954)

[illegible] East [illegible] Accession ([illegible]), [illegible], Vol. [illegible], [illegible], [illegible], [illegible].

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6

SORM, F.

CZECH

6190* Mechanism of Antibiotic Action. O mekhanizme deistviia antibiotikov. II. Specific Action of *d*-Chloramphenicol on the Development of Some Seedling Plants. Spetsificheskoe deistvie *d*-khloramfenikola na razvitie rostkov rastenii. (Russian.) F. Sorm, M. Zelinková, and Z. Sormová. *Collection of Czech[redacted]emical Communications*, v. 19, no. 6, Dec. 1954, p. 1324-1329.

Seeds with different reserves of protein, starch, and oil gave different responses to the inhibitory effect. Graphs. 9 ref.

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6

SORM, F., akademik.

Report of the year's activity of the Academy of Sciences of Czechoslovakia. Vest. AN SSSR 24 no.9:65-69 S '54. (MLRA 7:9)

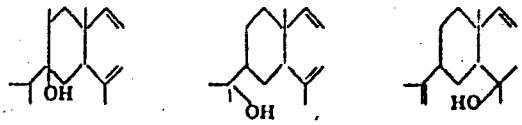
1. Glavnyy uchenyy sekretar' Chekhoslovatskoy Akademii nauk. (Academy of Sciences of Czechoslovakia)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6

SORM, FRANTISEK

Terpenes. LV. Synthesis of elemane (1-methyl-1-ethyl-2,4-diisopropyl cyclohexane). Vladimír Sýkora, Jiří Černý, Vlastimil Herout, and František Sorm (Čsl. akad. věd, Prague, Czech.). *Chem. Listy* 48, 10-9(1954); cf. preceding abstr.—Synthetic *1-methyl-1-ethyl-2,4-diisopropylcyclohexane* (I) is identical with *elemane*, a reduction product of elemol. However, *1,5-diisopropyl-2-methyl-2-ethylcyclohexanol* (II) is not identical with tetrahydroelemol. One of the three formulas is suggested for elemol.



To a suspension of dry MeONa (prepd. from 23 g. Na) in 200 ml. C_6H_6 was added 75 g. HCO_2Et in 200 ml. C_6H_6, and to the ice-cooled mixt. was added a soln. of 51.5 g. carvomenthone (b_{11} 94–4.5°, n_D^{20} 1.4543) in 300 ml. C_6H_6. After 48 hrs. at room temp. under N atm., the mixt. was decompd. with H_2O, the C_6H_6 layer repeatedly extd. with 7% NaOH, the alk. ext. was extd. with Et_2O, then acidified with HCl (1:1) to pH 6, and extd. again with Et_2O to give 47 g. (83%) *2-methyl-5-isopropyl-6-formylcyclohexanone (formylcarvomenthone)* (III), b_{14} 122–2.5°. Etherification of III (47 g.) with 38 g. iso-BuOH yielded 49 g. (80%) *2-methyl-5-isopropyl-6-(isobutoxymethylene)cyclohexanone* (IV), $b_{0.4}$ 112–15°. To ethylate IV, KNH_2, prepd. from 16 g. K in 160 ml. liq. NH_3 with 0.1 g. $Fe(NO_3)_3$, was added to 500 ml. boiling Et_2O, the NH_3 was driven off under N atm., 44.7 g. IV in 200 ml. Et_2O was added during 2 hrs. after 1.5 hrs. boiling, in the course of 2 hrs., 90 g. EtI in 150 ml. Et_2O was added, and the mixt. refluxed 12 hrs., treated with H_2O, the aq. layer extd. with Et_2O, the ext. washed with 5% KOH, H_2O, dried, the Et_2O evapd., and the residue mixed with 250 ml. *M* methanolic $FeCl_3$. Treating the Fe complex with 400 ml. HCl (1:1), extg. the mixt. with Et_2O, washing the ext. with dil. HCl and H_2O, extg. the ether soln. repeatedly with 5% KOH, and steam distg. the alk. soln. yielded 17.5 g. (51.2%) *2-methyl-2-ethyl-5-isopropylcyclohexanone* (V), pure, b_{12-4} 113–3.5° (15.5 g.); *semicarbazone*, m. 111.5–12.5° (from aq. MeOH). Adding 1.82 g. V to a soln. of iso-PrLi (prepd. from 0.7 g. Li and 10 ml. iso-PrCl), and heating the mixt. 1.5 hrs. gave 2.1 g. 1,5-diisopropyl-2-methyl-2-ethylcyclohexanol (VI), b_{14} 141–5°. Dehydration of 1.5 g. VI by heating 40 min. on the steam bath with fivefold excess of 80% HCO_2H, chromatography, and hydrogenation of the petr. ether fraction (0.9 g., b_{12} 112–13°) over PtO_2, gave *1-methyl-1-ethyl-2,4-diisopropylcyclohexane* (VII), d_{20} 0.8480, n_D^{20} 1.4638. Infrared spectra of VII and of elemane obtained by total reduction of elemol are identical.

M. Hudlický

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ŠORM, František

Chemical Abst.
Vol. 48 No. 9
May 10, 1954
Biological Chemistry

Effect of aconitine on the metabolism of brain tissue. František Šorm and Zdeňka Beránková (Czech. akad. věd, Prague, Czech.). *Chem. Listy* 48, 80-8(1954).—The influence of aconitine upon metabolism of the gray matter was followed. Low concns. of aconitine (0.02-0.2 mg. %) stimulate considerably the metabolism. Higher concns. first stimulate, then inhibit metabolism. The stimulation which is specific for the brain tissue is ascribed to the activation of the O bond. M. Hudlický

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~~FRANTISEK~~ SORM, FRANTISEK

CZECH

The reaction of ketene with hydrogen cyanide. Jiří Smrt and František Sorm (Czech. akad. věd, Prague, Czech.). Chem. listy 48, 217-20(1954).—In the presence of basic catalysts, $CH_2:CO$ and HCN form a mixt. of $CH_2:C(CN)OAc$ (I) and $MeC(CN)_2OAc$ (II). The yield of I is higher at −70° to −60°. The best yields of I were obtained with $PhNMe_2$ (71%), Et_2NH (61.5%), and EtONa (54%) as catalysts. The structure of I, formed as a primary product, was proved by its transformation to $BrCH_2CH(CN)OAc$ (III) and $BrCH_2CH(OH)CO_2Et$ (IV). $CH_2:CO$ (1.6 moles) passed 2 hrs. through a soln. of 14.5 g. anhyd. HCN in 60 ml. Et_2O contg. 0.5 ml. Et_2NH and cooled to −60°, and the mixt. allowed to stand 2 hrs. at room temp. and fractionated *in vacuo* gave 34.5 g. (61.5%) I, b_{12} 62-4°. To prep. II, 29 g. HCN in 100 ml. Et_2O, 25 ml. Ac_2O, and 0.5 ml. $N(CH_2CH_2OH)_3$ was treated with 2 moles $CH_2:CO$ at −5° during 4 hrs.; distn. *in vacuo* yielded 67 g. (95%) II, b_{12} 105-7°, m. 70°. Heating in an autoclave 5.5 g. I 6 hrs. at 100° with 12.7 g. 31% soln. of HBr in AcOH gave, by vacuum distn., 5.5 g. (57%) III, b_{12} 106°, n^{20}_D 1.4798. Refluxing 3 g. III with 10 ml. 48% aq. HBr 4 hrs., evapg. the soln. *in vacuo*, refluxing the residue with 50 ml. EtOH and 50 ml. C_6H_6 in the presence of 0.1 g. sulfosalicylic acid 6 hrs., dilg. the soln. with 10 ml. H_2O, and extg. the mixt. with 15 ml. Et_2O gave 1.55 g. IV, m. 41°, b_{12} 97°. I (5.5 g.) in 10 ml. Et_2O added with cooling to 8.5 g. $C_5H_{11}N$ in 10 ml. Et_2O gave, by vacuum distn., 11.8 g. (93%) $AcNC_5H_{10}$, b_{12} 106°. Heating 3 g. I in the presence of 30 mg. Br_2O_2 80 hrs. at 50-60° gave a glassy polymer, swelling in Me_2CO, and sol[illegible] to a rubberlike mass. M. Hudlický

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

"Terpenes. LVII. Identity of Linderazulene with Chamazulene", P. 281, (CHEMICKE LISTY, Vol. 48, No. 2, Feb. 1954, Praha, Czechoslovakia)

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 3, No. 12, Dec. 1954, Uncl.

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SORM, FRANTISEK

CZECH

Terpenes. LVIII. Total syntheses of 1,1,4,8-tetramethylcycloundecane (humulane). Proof of the eleven-membered ring in humulene. Frantisek Sorm, Milan Streibl, Václav Jarolím, Ladislav N[redacted] Dolejš, and Vlastimil Herout (Ústav Org. Chemie, ČSAV, Prague, Czech.). *Chem. Listy* 48, 573-83(1954); *Collection Czechoslov. Chem. Communs.* 19, 570-80(1954)(in English); cf. *C.A.* 48, 12708h.—1,1,4,8-Tetramethylcycloundecane (I) was synthesized by 2 different ways; a 3rd possible way was abandoned as unsuitable at the stage of $HO_2CCHMe(CH_2)_3CMe(CH_2)_3CHMeCO_2H$ (II). The identity of I was proved by d., n, and infrared spectra. $EtO_2CCH_2CMe_2CH_2CH_2CO_2Et$ (1.2 g.) in 10 ml. Et_2O was dropped into 30 ml. Et_2O contg. 1 g. $LiAlH_4$, and the mixt. refluxed 1 hr., decompd. with H_2SO_4, and extd. with Et_2O to give 0.75 g. (80%) $HO(CH_2)_3CMe_2(CH_2)_3OH$ (III), b_{11} 150°. III (15 g.) satd. with HBr at 95-135° gave 21.8 g. (82%) $Br(CH_2)_3CMe_2(CH_2)_3Br$ (IV), b_{10} 124-3°. The Na salt of $MeCH(CO_2Et)_2$ (V) prepd. from 7 g. V with 0.92 g. Na dust in 30 ml. PhMe, treated in an autoclave 5 hrs. at 170° with 5.6 g. IV, gave 5 g. (67%) of the product of condensation of IV with 1 mole of V, $b_{0.5}$ 135-40°, and 1.5 g. (16%) $(EtO_2C)_2CMe(CH_2)_3CMe(CH_2)_3CMe(CO_2Et)_2$ (VI), $b_{0.5}$ 170°. Hydrolysis of VI with KOH in MeOH gave 67% $(HO_2C)_2CMe(CH_2)_3CMe_2(CH_2)_3CMe(CO_2H)_2$, m. 160-5° (decompn.). Decarboxylation of the acid at 170-80°/20 mm. yielded 74% glassy II, $b_{0.5}$ 160-4°; *di-Me ester* (with CH_2N_2 in 82% yield), $b_{0.5}$ 115°. $Me_2C(CH_2CO_2Et)_2$ (74 g.) in 100 ml. Et_2O added in 30 min. to 13 g. $LiAlH_4$ in 600 ml. Et_2O, the mixt. refluxed 30 min., decompd. with wet Et_2O, H_2O, and HCl, and repeatedly extd. with 4 l. Et_2O gave 36 g. (80%) $Me_2C(CH_2CH_2OH)_2$ (VII), b_{11} 146°. VII was transformed to 33% $Me_2C(CH_2CH_2Br)_2$

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SORM, F.; [illegible], V.; [illegible], C.

"Terpenes. LX. Composition of Juniper Oil", P. 5[illegible], ([illegible]. Vol. 4[illegible], No. 4, April 1954, Praha, Czech.)

SO: Monthly List of East European Accessions (EEAL), LC, Vol. 4, No. 3, March 1955, Uncl.

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SORM, F.

Proteins. XXIV. Substitution of ε-amino groups of lysine in the molecule of chymotrypsinogen by the reaction with dinitrofluorobenzene. Věra Knessloová, Bořivoj Keil, and František Šorm (Ústav Org. Chem., ČSAV, Prague, Czech[redacted] 48, 599-601(1954); cf. C.A. 48, 6478b.—By carrying out the reaction of 2,4-dinitrofluorobenzene (I) with chymotrypsinogen in a soln. of $NaHCO_3$ and 1% Me_3N, under certain conditions all of the ε-amino groups in lysine reacted with I. The importance of pH in the reaction is stressed. M. Hudlický

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SORM, František

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Reactions of ketene. III. The reaction of ketene with acid chlorides. Jiří Bránek, Jiří Sorm, and František Sorm (Czech. Akad. věd, Prague). *Chem. Listy* 48, 979-[illegible]; cf. *C.A.* 49, 175c, 2311b.—Ketene (I) reacts with acid chlorides having next to the COCl group a neg. group like CH_3COCl, CCl_3COCl, CO_2Et, $CHCl_2$, $COPh$, and CH_2Ph, to give primarily the corresponding acetoacetyl chlorides. The case of the reaction drops in the order given. Passing I (0.1 mole/hr.) into a soln. contg. 11 g. $CH_3(COCl)_2$ in 30 ml. $CHCl_3$ 3.5 hrs. at −5°-0°, esterifying the mixt. with 25 ml. EtOH, and distg. the product *in vacuo* yielded 15.3 g. $CO(CH_2CO_2Et)_2$, b. 105-10°, b. 92°, d_4^{20} 1.113, n_D^{20} 1.4424; *semicarbazone*, m. 90°. Treating 54.5 g. CCl_3COCl (II) in 50 ml. $CHCl_3$ with I (0.1 mole/hr.) 3 hrs. at 13°, adding to the mixt. 50 ml. abs. EtOH, and distg. the mixt. *in vacuo* gave 19.5 g. CCl_3CO_2Et, and 37 g. of a solid which yielded 17.1 g. Cl_3CCH $CO.CH_2.CO.O$ (III), m. 191° (decompn.) (from C_6H_6-EtOH). Fractionation of the mother liquors *in vacuo* gave 13.5 g. $CCl_3COCH_2CO_2Et$ (IV), b. 100-102°. Satg. 22.3 g. II in 40 ml. $CHCl_3$ 1.5 hrs. at −5-0° with I (0.1 mole per hr.), esterifying the mixt. with 30 ml. MeOH, and distg. off the solvents and 12 g. CCl_3CO_2Me, b. 18°, gave 5.1 g. III and 1.35 g. $CCl_3COCH_2CO_2Me$, b. 98-8°. Treatment of 18.2 g. II in 20 ml. $CHCl_3$ with 0.1 mole of I at 15° gave, after stripping off the solvent *in vacuo*, 6.2 g. $CCl_3COCH_2COCH_2COCl$, unstable and hygroscopic crystals, m. 67-72°, giving III on melting. Passing 0.1 mole I into a soln. of 12.5 g. $(COCl)_2$ in 20 ml. $CHCl_3$ at

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Jiri Beranek

60-5° and distg. off *in vacuo* at 0° the unreacted $(COCl)_2$ (5.3 g., 41%), esterifying the residue by refluxing 30 min. with 20 ml. EtOH, and distg. the mixt. *in vacuo* gave 8.2 g. $EtO_2CCOCH_2CO_2Et$ (IV), b_{11} 107-113°, $b_{0.6}$ 83°, d_{20} 1.1324, n_D^{20} 1.4535; *semicarbazone*, m. 162°. Satg. a soln. of 13.6 g. $ClCOCO_2Et$ in 20 ml. $CHCl_3$ with 0.4 mole I at 15°, refluxing the mixt. 30 min. with 20 ml. abs. EtOH, and stripping off the solvents gave 2.2 g. $EtO_2CC{:}CH.CO.CH_2.CO.O$, m. 165° (from C_6H_6-EtOH 10:1), 3.15 g. $(CO_2Et)_2$, b_{10} 72°, and 5.5 g. (20%) IV, b_{11} 111-12°. Satg. a boiling soln. of 14.5 g. $CHCl_2COCl$ in 20 ml. $CHCl_3$ with 0.4 mole I and esterifying the mixt. with 20 ml. EtOH gave 9 g. $CHCl_2CO_2Et$, b_{10} 56°, and 2.5 g. (13%) $CHCl_2COCH_2CO_2Et$, b_{11} 104-5°, n_D^{20} 1.4654. The reaction of I with AcCOCl (5 g.) yielded 4.05 g. $AcCO_2Et$, b_{11} 50-5°, and 1.12 g. $AcCOCH_2CO_2Et$, b_{11} 80-8°, b_{10} 74-5°. Satg. the boiling soln. of 15.4 g. $PhCH_2COCl$ in 20 ml. PhCl with 0.4 mole I, and esterifying the mixt. with 20 ml. EtOH yielded 14.8 g. $PhCH_2CO_2Et$, b_{11} 101-8°, and 2.02 g. $PhCH_2COCH_2CO_2Et$, b_{11} 150-5°, b_{11} 144°. Also in Collection Czechoslov. Chem. Commun. 19, 1231-7(1954) (in German).

M. Hudlicky

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Sorm, Frantisek

Terpenes. LXI. Constitution of prochamazulenogen natural precursor of chamazulene in Artemisia absinthium

Vlastimil Herout and František Šorm (Czech. akad. věd. Prague). *Chem. Listy* 48, 706-11; *Collection Czechoslov. Chem. Communs.* 19, 792-7(1954)(in English); cf. *C.A.* 49, 4585d.—Prochamazulenogen (I)(2 double bonds) (*C.A.* 49, 697c), m. 133-5° (from EtOH), $[\alpha]^{20}_{D}$ −49°, reduced with $LiAlH_4$ in Et_2O, gave a glassy product, a twice unsatd. triol (II), the dehydration of which by 90% HCO_2H, by $KHSO_4$, or by p-$MeC_6H_4SO_3H$ gave only slight amt. of an azulene. Dehydrogenation of 200 mg. II by heating with 20 mg. S 30 min. at 180-195° yielded by petr. ether elution 2 g. guaiazulene (III), and by C_6H_6 elution, 45 mg. of a new blue azulene, *artemazulen*- $C_{15}H_{16}O$ (IV) (infrared, visible, and ultraviolet spectra given); $C_6H_2(NO_2)_3$ compd., m. 192° (from EtOH). Reduction of the mother liquors of prochamazulenogen (*loc. cit.*) with $LiAlH_4$, and dehydrogenation with S yielded, besides small amts. of chamazulene and III, IV and a violet azulene $C_{14}H_{16}O$; $C_6H_2(NO_2)_3$ compd., m. 153-4° (from EtOH) (visible and ultraviolet spectra are given). A lactone (V) obtained from I by catalytic hydrogenation, was reduced with $LiAlH_4$ to give a diol $C_{15}H_{26}O_2$ (VI), $b_{0.8}$ 165-7°, the dehydration of which by refluxing 5 min. with p-$MeC_6H_4SO_3H$ in xylene yielded an ether (VII) $C_{15}H_{26}O$, $b_{0.1}$ 147°, d_{20} 0.9681, n^{20}_{D} 1.4951. A

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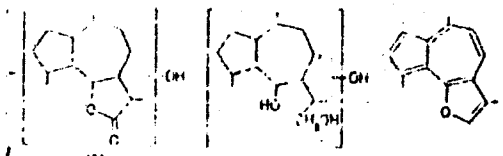
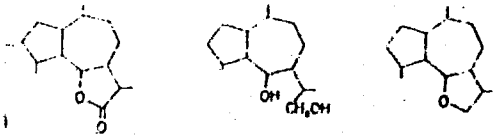


(I) (II) (IV)



(V) (VI) (VII)

hydroxy lactone prepd. from I by hydrogenation gave by $LiAlH_4$ reduction a compd., m. 150-1°. LXII. Isolation and properties of prochamazulene from Matricaria chamo-

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Vlastimil Herout

milla, a further compound of the guaianolide group. Zdeněk Čekan, Vlastimil Herout, and František Šorm. *Chem. Listy* 48, 1071–7; *Collection Czechoslov. Chem. Communs.* 19, 798–804(1954)(in English).—A bicyclic hydroxy acetoxy lactone $C_{17}H_{22}O_5$ (I) contg. 2 double bonds, isolated from *M. chamomilla*, is a source of chamazulene. Extg. 4.3 kg. dried flowers of *M. chamomilla* with cold petr. ether gave 198 g. of an ext. which was dissolved in 2 l. petr. ether, extd. with ten 1000-ml. portions of 2% aq. $KHCO_3$, the aq. layers were extd. 4 times with 500 ml. Et_2O, and the ether ext. evapd. to give 8.4 g. sirupy residue which yielded 2.5 g. I (prochamazulene), m. 158–60° (from Me CO-iso-Pr_2O). Hydrogenation of 647 mg. I over PtO_2 in AcOH gave satd. compds. $C_{17}H_{28}O_5$, one eluted with petr. ether, m. 123° (from petr. ether), the other eluted with C_6H_6, m. 115.5° (from petr. ether). Heating 100 mg. I in 10 ml. EtOH with 50 ml. 2% AcOH 30 min. at 50°, extg. the emulsion with Et_2O, treating the ext. with 2% Na_2CO_3, extg. the soln. with Et_2O, acidifying the aq. layer with AcOH, and extg. it with Et_2O gave 32 mg. dark blue liquid, *guaiazulenic acid* (II); Me ester, prepd. by CH_2N_2, dark blue oil (III). Infrared spectra of I and of the two satd. lactones, and ultraviolet spectra of II, III, and chamazulene are given.

M. Hudlický

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SORM, FRANTISEK

Proteins. XXV. Chemical structure of proteins. Frantiček Šorm (Czech. akad. věd, Prague). *Chem. Listy* 48, [illegible] *C.A.* 48, 13781*b*.—Preliminary. XXVII. Comparative study of the acidic peptide fractions from partial hydrolyzates of chymotrypsinogen and trypsinogen. Bořivoj Keil and Frantiček Šorm. *Ibid.* 735–46; cf. *C.A.* 48, 13450*i*.—On the basis of analysis of the most acidic peptides from the partial hydrolyzates of various proteins it is concluded that the peptide chains of chymotrypsinogen and trypsinogen are comparable in the quantity of cysteine and cystine residues and that they differ from other proteins studied. The compn. of trypsinogen was as follows (g. amino acids/100 g. trypsinogen): aspartic acid 13.6, glutamic 10.7, arginine 1.6, lysine 10.2, histidine 1.4, serine + glycine 19.2, alanine 5.8, valine 9.0, proline 5.5–5.8, leucine + isoleucine 18.2, phenylalanine 4.4, threonine 5.4, cysteine + cystine 6.6, methionine 1.2, tyrosine 6.4, tryptophan 3.7. M. Hudlický—

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SORM, F.

"Proteins. XXVII. Comparative study of acidic peptide fractions from partial hydrolyzates of chymotrypsin and trypsin." Ceskoslovenska, Morfologie, Praha, Vol. 48, No. 5, May 1954, p. 735.

SO: Eastern European Accessions List, Vol. 3, No. 11, Nov. 1954, L.C.

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SORM, FRANTISEK

CZECH

Plant substances. III. Substances from Lactarius deliciosus L. Věra Benešová, Vlastimil Herout, and František Šorm (Czech. akad. věd, Prague). *Chem. Listy* 48, 882-5(1954); cf. *C.A.* 47, 7735g; 49, 907c.—EtOH extn. of 23.5 kg. *Lactarius deliciosus L.* gave 1.5 g. *mannitol*, m. 166°. From the C_6H_6 ext. (6 g.) were isolated: *ergosterol stearate*, m. 110.5°, $[\alpha]^{18}_D$ −53.4° (*ergosterol*, m. 161°, $[\alpha]^{18}_D$ −121°; *acetate*, m. 174°, $[\alpha]^{18}_D$ −93°); 0.49 g. *octyl stearate*, m. 35.5°, $b_{1.4}$ 150-67° (infrared spectra given); 0.19 g. *lactarazulene*; 0.11 g. *verdazulene*, m. 94.5°; and *lactaroviolin*, m. 337°. M. Hudlický

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SORM, FRANTISEK

Mechanism of antibiotic action. II. The specific effects of D-chloramphenicol on the development of seedlings. František Šorm, Marie Zelinková, and Zora Šormová (Česk. akad. věd, Prague). *Chem. Listy* 48, 910-14(1954); cf. *C.A.* 48, 4044h.—Differences in intensity and direction of the inhibitive effect of D-chloramphenicol depend on the nature of the seedlings. Most intensive inhibition of growth and biosynthesis of chlorophyll was found in seedlings with protein reserves. Seedlings of carbohydrate nature are affected less strongly. Oily seedlings show almost no inhibition of growth, but a strong inhibition of chlorophyll synthesis. IV. Accumulation of free alanine in seedlings under the influence of D-chloramphenicol. Marie Zelinková and František Šorm. *Ibid.* 1246-9; cf. *C.A.* 48, 13801d.—D-Chloramphenicol (I) causes accumulation of alanine in seedlings of various types. The accumulation depends, within certain limits, directly on the concn. of the antibiotic in the cultivation medium. At the highest concn. of I (60 γ/ml.), the amt. of alanine in seedlings (5 days old) of wheat increases 12 times, in those of rape seed 5 times, or buckwheat 4 times, and of pea 3.5 times. The common presence of alanine and I in the cultivation medium increases the effect of the antibiotic, whereas alanine alone stimulates growth of pea seedlings, especially the root system.

M. Hudlický

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CZECH

Steroids. XII. Determination of the configuration of 3-dimethylamino derivatives of cholestane. Ludvík Labler, Václav Černý, and František Šorm (Czech. akademie věd, Prague). *Chem. Listy* 48, 1068-88; *Collection Czechoslov. Chem. Communs.* 19, 1249-57(1954)(in English); cf. *C.A.* 49, 359a.—Previously prepd. *3-dimethylaminocholestane* (I) was proved to have 3β-configuration. Cholestanone (8 g.) in 250 ml. 96% EtOH treated at room temp. with 48 g. KCN and 51 ml. AcOH, pouring the mixt. (after 5 hrs.) into 1 l. H_2O, extg. the sepd. solid cholestanone cyanohydrin with AcOEt-$CHCl_3$, washing the ext. with H_2O, 3% HCl, and H_2O, and evapg. the soln. *in vacuo* at 40° yielded 6.7 g. cyanohydrin which was dried azeotropically and dehydrated by refluxing 4 hrs. with 45 ml. C_5H_5N and 5 ml. $POCl_3$. The crude 3-cyano-2(or 3)cholestene (5.47 g.) m. 129-30°, $[\alpha]_D$ 77°, obtained by pouring the dehydrated mixt. into H_2O and by extg. of the mixt. with Et_2O. Hydrogenation of 5.6 g. unsatd. nitrile in dioxane over 5% Pd-$CaCO_3$ at 10° and 746 mm. gave 3.7 g. 3β-cyanocholestane (II), m. 149.5-51° (from EtOH). Distg. II (0.95 g.) with a mixt. of 3.2 g. NaOH, 5 ml. H_2O, and 52 ml. MeO-CH_2CH_2OH until the temp. rose to 125°, refluxing the mixt. 7 hrs., pptg. the Na salt with equal amt. of Et_2O, decompg. the aq. suspension of the salt with 15% HCl, and extg. the free acid (III) with Et_2O gave 820 mg. crude and 755 mg.

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Organosilicon compounds. III. Comparison of the reactivities of alkoxysilanes toward the Grignard reagent. Jiří Rathouský, Vladimír Bažant, and František Šorm (Czech. Akad. věd. Prague). *Chem. Listy* [illegible] (1954); *Collection Czechoslov. Chem. Communs.* 20, 72-81 (1955)(in Russian); cf. *C.A.* 49, 161a.—The reactivity of alkoxy groups bound to Si toward MeMgCl decreases with increasing mol. wt. and with branching: EtO > PrO > BuO > iso-BuO > iso-PrO > sec-BuO > *tert*-BuO. The

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prepn. of some intermediates is given. Adding 381.6 g. PrOH to 1390.4 g. $SiCl_4$ during 5 hrs., stirring the mixt. 2 more hrs., distg. the product in *vacuo*, and fractionating the distillate on a 20-plate column gave 777.6 g. $ClSiOPr$, b. 125°. Similar treatment of 897 g. $MeSiCl_3$ with 800.5 g. abs. *sec*-BuOH gave 825 g. $MeSiCl(O\text{-}sec\text{-}Bu)_2$, b. 75.0°. In the same way were prepd. BuO derivs.: $ClSiOBu$, b. 87.92°; $ClSiOBu)_2$, b. 140.70°; $MeSiCl(OBu)_2$, b. 116.7.5°; and $MeSiCl(OBu)_2$, b. 93.9°. $MeSiCl_3$ (290 g.) and BuOH (593 g.) yielded in the usual way 333.8 g. $MeSi(OBu)_3$, b. 120°. Yields (in %), b.p., and n of $MeSi(OR)_3$ are listed: *Et* 68.2, 140.5°, n_D^{20} 1.3821; *Pr*, 60.9, 192°, n_D^{20} 1.3778; *iso-Pr*, 53.8, 161.2°, n_D^{20} 1.3816; *Bu*, 81.8, b. 120°, n_D^{20} 1.4083; *iso-Bu*, 78.6, 214.16°, n_D^{20} 1.4010; *sec-Bu*, 67.8, 213.15°, n_D^{20} 1.4050; and *tert-Bu*, 58.3, 192.5°, n_D^{20} 1.3972. Treating 132.2 g. $MeSi(OPr)_3$ with 385 ml. ether soln. of MeMgCl (1.26 mole), stirring the mixt. 18 hrs., hydrolyzing the product with 1000 ml. dil. HCl (1:4), distg. Et_2O from the ether layer, finishing the hydrolysis and condensation of the residue by refluxing 3 hrs. with 150 ml. concd. HCl, washing the product with H_2O, and distg. yielded 28 g. $Me_2SiOSiMe_2$, b. 98-101°. Similar reaction applied to chloroalkoxysilanes yielded linear polymers. Adding 635 ml. Et_2O contg. 1.54 mole MeMgCl to 171.6 g. $(BuO)_2SiCl_2$ dissolved in 1000 ml. Et_2O, stirring the mixt. 2 hrs., hydrolyzing it 45 min. with 300 ml. HCl (1:2), removing the ether, finishing the hydrolysis and condensation by refluxing the mixt. 2 hrs. with 50 ml. HCl, distg. off Et_2O, and treating the residue (40 g.) with 5 vol.-% concd. H_2SO_4 gave dimethylpolysiloxane, kinematic viscosity 11,601 centistokes at 97.5°. $MeSi(O\text{-}i\text{-}o\text{-}Bu)_3$ was found to form an azeotrope with i-o-BuOH, b. 89.90°, n_D^{20} 1.3830, contg. 20.55% i-o-BuOH.

M. Hudlicky

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Sorm, František

Mechanism of antibiotic action. III. Synthesis of some enzyme systems by Escherichia coli under the influence of p-chloramphenicol. Desider Grünberger and František Sorm (Čech. Akademie věd, Prague). *Chem. Listy* 48, 1041-3(1954); cf. *C.A.* 48, 13827c.—No inhibition of synthesis of the enzymes involved in transamination between α-ketoglutaric acid and aspartic acid, valine, or leucine was observed with *E. coli* (I) under the influence of p-chloramphenicol (II). The inhibition of some amino acid decarboxylases observed previously was thus proved to be unrelated to the inhibition of coenzyme synthesis. The antibiotic does not decrease the formation of the γ-aminobutyric acid- α-ketoglutaric acid transaminase in growing I cells. II does not inhibit the adaptive enzymes of I which take part in HCO_2H metabolism. Partial inhibition of the hydrogenlyase of HCO_2H occurs in such II concns. which already suppress the propagation of bacterial cells.

M. Hudlický

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CZECH

Steroids. XIV. Rearrangements of basic 3,5-cyclocholestanes. Ludvík Lábler and František Šorm (Čsl. akad. věd, Prague). *Chem. Listy* 48, 1578-91(1954); *Collection Czechoslov. Chem. Communs.* 20, 188-91(1955) (in Russian); cf. *C.A.* 49, 9673a.—Stereospecific rearrangements of substituted 6-amino-3,5-cyclocholestanes lead to 3-substituted 5-cholestenes. Heating HCl salt of 6-dimethylamino-3,5-cyclocholestane (I) (0.5 g.) (m. 198°) at 210° in a stream of dry HCl and triturating the cooled product with Et_2O gave 0.16 g. of recovered product, and by evapn. of the filtrate, 0.3 g. *3β-chloro-5-cholestane*, m. 91-3° (from EtOH and from Me_2CO). Heating 20 g. 3β-tosyloxy-5-cholestene with 120 ml. liquid $MeNH_2$ 17 hrs. at 100° in an autoclave, extg. the mixt. with Et_2O, washing the ext. with 5% NaOH, evapg. the solvent, and chomatographing the residual oil (14 g.) yielded 1.5 g. 6-

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SORM, FRANTISEK

Effect of anions on brain glutamic acid decarboxylase. František Sorm and Timotej Turský (Czech. akad. věd., Prague). *Chem. Listy* 48, 1403-8(1954).—Brain glutamic acid decarboxylase is inhibited with anions in the sequence: AcO < Cl < PO_4^{3-} < citrate < Br < NO_3^- < SO_4^{2-} < I. The anion inhibition is of competitive type. The inhibitive effect is influenced by pyridoxal phosphate. Application of bromides *in vivo* does not change the activity of the decarboxylase *in vitro*. M. Hudlický

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CZECH

Terpenes. LXIII. Total synthesis of chamazulene. A simple general synthesis of 1,4,7-substituted azulenes. Jiří Novák, František Šorm, and Jiří Sicher (Čzech. Akad. věd, Prague). Chem. Listy 48, 1648-55(1954); Collection Czechoslov. Chem. Communs. 19, 1264-73(1954)(in English); cf. C.A. 49, 9064e.—A general synthesis of *1,4,7-trialkylazulenes* has been worked out based on the hydrogenation of a suitably substituted *ar*-dihydroxybenzosuberene to the satd. diol, oxidation of the diol to the coresponding dicarboxylic acid, and cyclization to the desired azulene skeleton. *Chamazulene* was synthesized in this way. 2,3-$(MeO)_2C_6H_3COCl$ and Pr_2Cd gave 72% 2,3-$(MeO)_2C_6H_3$-COPr (I), $b_{0.2}$ 104°; *semicarbazone*, m. 154.5° (from MeOH). Refluxing 120 g. I, 61 g. $Me_2NH.HCl$, 35 g. $(CH_2O)_n$, and 2.5 ml. concd. HCl in 450 ml. EtOH 4 hrs. with efficient stirring, adding 10 g. $(CH_2O)_n$, refluxing 8 more hrs., distg. off most of the EtOH, stirring the cryst. residue several times with Et_2O, dissolving the crystals in H_2O, liberating the bases with 400 ml. 10% NaOH, extg. the mixt. with Et_2O, concg. the ext. *in vacuo* to 80 ml., and treating the concentrate with dry HCl gave 66 g. 2,3-$(MeO)_2C_6H_3CO$-$CHEtCH_2NMe_2.HCl$ (II), m. 141° (from EtOH), and 65 g. recovered I. Treating 21.5 g. II in 60 ml. H_2O with 40 ml. 10% NaOH, extg. the liberated base with Et_2O, adding with cooling 20 g. MeI, evapg. the excess MeI and Et_2O *in vacuo*, stirring the crystals with 100 ml. EtOH, treating the mixt. with $NaCH(CO_2Et)_2$ [prepd. from 2.2 g. Na and 15 g. $CH_2(CO_2Et)_2$] in 100 ml. EtOH, refluxing the mixt. until no more Me_3N escaped (8 hrs.), distg. off the EtOH, dissolving the NaI in H_2O, refluxing the crude diester 2,3-$(MeO)_2C_6H_3COCHEtCH_2CH(CO_2Et)_2$ with 40 ml. 10% NaOH 2 hrs., acidifying the mixt., decarboxylating the free acid by heating 30 min. at 170°, and distg. the crude acid *in vacuo* gave 13.6 g. 2,3-$(MeO)_2C_6H_3COCHEtCH_2CH_2$-$CO_2H$ (III), $b_{0.2}$ 190°. Hydrogenation of 23.5 g. III in 200 ml. AcOH over 3 g. 5% Pd-C at 80-90° gave 21.6 g. 2,3-$(MeO)_2C_6H_3CH_2CHEtCH_2CH_2CO_2H$ (IV), $b_{0.2}$ 181°. Cyclizing 25 g. IV by heating 1 hr. at 70° with 750 g. pol-

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SoRM, F

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Proteins. XXVIII. Comparison of the arginine peptides from partial hydrolyzates of chymotrypsinogen and trypsinogen. Jiří Vaněček, Bořivoj Keil, and František Sorm (Česk. akad. věd, Prague, Czech.). *Chem. listy* [illegible] (1954); *cf. C.A.* 48, 13747*f*.—Chymotrypsinogen (I), trypsinogen (II), and insulin (III) (in 200 cc. soln.) were partially hydrolyzed by heating 6 days at 37° with 10 ml. concd. HCl. The arginin peptides were sepd. by passing the hydrolyzates over a column filled with Amberlite IRA-400, and further investigated by means of total hydrolysis and the dinitrophenyl method. Both I and II contain the grouping seryl-arginyl and valyl-arginyl; I differs from II by contg. a third mol. of arginine bound to threonine and alanine. In III the main grouping of glycine and arginine corresponds to the Sanger formula but the grouping of arginine with leucine is in contradiction. XXIX. Oxidation of pancreatic proteases. Bořivoj Keil. *Ibid.* 1837–41.—Oxidation of I, II, and α- and γ-chymotrypsins with performic acid is accompanied by denaturation of the proteins and by splitting off small amts. of low-mol. peptides. Hydrolytic fission of peptide bonds during the reaction cannot be prevented. Biol. activity decreases rapidly with oxidation. Two main chains of chymotrypsin seem to be linked not only by disulfide bridges, but by stronger, probably peptide bonds. The oxidation was carried out by dissolving the protein (1 g.) in a mixt. of 40 ml. 90% HCO_2H and 4 ml. 28% H_2O_2, holding at room temp. 20 min., adding 40 ml. H_2O, and evapg. to dryness below 50° *in vacuo*. The residue was stirred with Me_2CO (60 ml.), the gummy mass centrifuged, washed twice with 60 ml. Me_2CO, stirred with 60 ml. 0.1*N* NH_4OH, after 2 hrs. the pH adjusted to 6 with 5*N* H_2SO_4, the ppt. 0.8 g. centrifuged, the filtrate acidified with 5*N* AcOH to pH 4, dried

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J. Vanesek

from frozen state, the residue dissolved in 8 ml. H_2O, treated with 8 ml. 50% $AcONH_4$, the ppt. of 20 mg. centrifuged, the soln. evapd., and $AcONH_4$ evapd. at 90° and 0.1 mm., leaving 80 mg. product (A), sol. in H_2O, mol. wt. approx. 3000. Ultraviolet absorption spectra show an absence of aromatic amino acids. Ultraviolet spectra of I, II, and fractions (A) of both proteins are given.

M. Hudlický

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SORM, F.

Content of adenosinetriphosphoric acid in seedling of Phaseolus vulgaris. K. Šebesta and F. Šorm (Czech. akad. věd, Prague). *Chem. Listy* 48, [redacted] (1954).—The content of adenosinetriphosphoric acid was followed in bean seedlings, and was found to increase 5-9 times during the 5 days of germination, being finally 20 mg. %.

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SORM, F.

Quinolizine alkaloids. V. Dipole moments and configurations of (±)3-lupinine and (±)3-epilupinine. Josef Ratusky, Arnošt Reiser, and František Šorm (Czech. Akad. věd. Prague). *Chem. Listy* 48, 1704-9(1954); cf. C.A. 49, 3988f.—From dipole moment measurements (in Debyes) of (±)-*lupinine* m. 59° (3.07 D.), (±)-*epilupinine*, m. 81° (2.30), (±)-*3-lupinine* (Ia), m. 59° (2.83) and (±)-*3-epilupinine* (Ib), m. 30° (2.42), it was deduced that Ia possesses configuration α and Ib configuration β. A new synthesis of Ia and Ib is described. Hydrogenation of 34.3 g. di-Et [2-(2-pyridyl)ethyl]malonate in 40 ml. AcOH and 30 ml. EtOH over 2 g. PtO_2 20 hrs. at normal conditions, evapn. of the solvents, washing of the residue with H_2O and $NaHCO_3$, and extn. with Et_2O gave *di-Et [2-(2-piperidyl)-ethyl]malonate* (II), viscous oil, cyclized to *Et octahydro-4-oxo-3-quinolizinecarboxylate* by distn. Treating 8.9 g. II in 60 ml. H_2O alkalinized to pH 8-10 with Na_2CO_3 with an equiv. amt. of 40% HCHO (2.55 ml.) 2 days at room temp., evapg. the soln. *in vacuo* below 50°, extg. the residue with ether, and evapg. the solvent gave a viscous oil, probably a $HOCH_2$ deriv. of II. Distn. at 180-200° *in vacuo* gave 3.4 g. (33.6%) *Et octahydro-3,3-quinolizinedicarboxylate* (III), $b_{1.5-1.6}$ 125-35°, $b_{0.5}$ 122-3°. Also obtained in 87.5% (3.9 g.) yield by treating 4.28 g. II with 1.44 ml. 40% CH_2O in 9 ml. CH_3N. Shaking 5.8 g. III in 50 ml. *N* NaOH at room temp. overnight, neutralizing the soln. with HCl, heating it 3 hrs. on the steam bath, alkalinizing, extg. with Et_2O to remove octahydro-4-oxoquinolizine, acidifying with HCl to Congo red, evapg. *in vacuo*, dissolving the residue in 50 ml. abs. EtOH, satg. the soln. with HCl, repeating the esterification twice more, evapg. the mixt. to dryness, neutralizing the residue with the min. atm. of aq. $NaHCO_3$, adding dry Na_2SO_4, boiling the ppt. several times with Et_2O, evapg. the solvent, and distg. the residue gave 2.5 g. (58%) *Et octahydro-3-quinolizinecarboxylate* (IV), b_5 112-14°.

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Dissolving 2.8 g. IV in 60 ml. Et_2O, adding 0.8 $LiAlH_4$ in 30 ml. Et_2O, decompg. the mixt. with H_2O, extg. with Et_2O and distg. the ext. gave 1.9 g. (85%) *3-(hydroxymethyl)octahydroquinolizine* (mixt. of Ia and Ib), $b_{0.4}$ 95–7°. In the chromatography over 100 g. alk. Al_2O_3, the petr. ether fractions gave Ia, m. 59°, and the ether fractions yielded Ib, m. 30°. The dielec. consts. were measured at 25°. Also in *Collection Czechoslov. Chem. Communs.* 20, 798–803 (1955) (in English). M. Hudlický

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SORM, F.

Terpenes. LXV. Constitution of lactavaroviolin. Synthesis of 1-ethyl-4-ethyl-7isopropylazulene and 1-methyl-4-ethyl-7-isopropylazulene. p. 1823

Vol. 48, no. 12, Dec. 1954
CHEMICKE LISTY
Praha, Czechoslovakia

So: Eastern European Accession Vol. 5, no. 4, 1956

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SORM, F.

CZECH

Variations in the nucleic acid content in seedlings of Pisum sativum in early stages of development under the influence of chloramphenicol. Zora Šormová and František Šorm (Česk. akad. věd, Prague). *Chem. Listy* 45, [illegible] —The syntheses of ribonucleic (I) and deoxyribonucleic (II) acids in the first 15 days of development of pea seedlings depends strongly on light and nourishment of the plants. The changes in content of I are relatively small, the content of II increases considerably. Chloramphenicol does not inhibit the synthesis of the nucleic acids to any considerable extent in the pea seedlings, but decreases the rate of development. M. Hudlický

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SORM FRANTISEK

CZECH

V/Virus. IV. Purification of Rous sarcoma virus by differential centrifugation. Libor Šechta, Alexander Jakubovič, and František Šorm (Czech. Acad. Sci., Prague). *Chem. Listy* 48, 1846-9(1954); cf. *ibid.* 800.—Differential centrifugation of ext. from Rous hen sarcoma yielded a fraction contg. 0.27% of the total N content of the ext. and was identified as the microsome fraction by means of electronic microscopy. $L.D._{50}$ of the fraction based on the N content was 250 times as high as $L.D._{50}$ of the starting ext. V. Effect of adenosine, adenylic acid, adenosinetriphosphate, and guanylic acid on the growth of Rous sarcoma. A. Jakubovič, L. Šechta, and F. Šorm. *Ibid.* 1875-7.—Adenosine, adenosinetriphosphate, adenylic acid, and guanylic acid, especially the last two compds., are stimulants for the growth of Rous sarcoma.

M. Hudlický

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SORM, FRANTISEK

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DL-Chloramphenicol and its analogs. František Šorm and Jiří Gut. Czech. 84,414, Dec. 1, 1955. A simplified method is described starting from the HCl salts of 2-aminoacetophenones which are acylated directly to the *N*-acyl compds. Hydroxymethylation with HCHO in aq. alk. medium yields 2-acylamino-3-hydroxypropiophenones which are reduced by the Meerwein-Ponndorf method to 1-phenyl-2-acylamino-1,3-propanediols. This procedure is shorter by 2 steps than the widely used method (cf. *Mfg. Chemist* 21, 235(1950)) and the final reduction yields only the desired *threo*-diastereoisomer, thus raising the yield by more than 100%. The method can be applied to derivs. arbitrarily substituted in the ring and acylated in the amino group, thus yielding various analogs of chloramphenicol (I). *p*-O_2N-$C_6H_4COCH_2NH_2.HCl$ (1 mole) heated in dry C_6H_6 with 1.1 moles $Cl_2CHCOCl$ until it dissolved (6–8 hrs.) yielded 90–95% *p*-$O_2NC_6H_4COCH_2NHCOCHCl_2$ (II), m. 144°. II (50 g.) in 250 ml. EtOH treated with 50 ml. 40% aq. HCHO soln. and 0.5 g. $NaHCO_3$, and the mixt. stirred until all ingredients dissolved (1–2 hrs.) and dild. with 1000 ml. water gave 68% cryst. *p*-$O_2NC_6H_4COCH(NHCOCHCl_2)$-$CH_2OH$ (III), m. 121°. $Al(OCHMe_2)_3$ (20 g.) in 200 ml. boiling dry iso-PrOH treated gradually with 20 g. III in iso-PrOH, the iso-PrOH and acetone distd. off, the residue boiled briefly with water, and the crude I extd. with Et_2O and crystd. yielded 50% product m. 150–1°.

L. J. Urbánek

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FRANTISEK SORM
SOR M. FRANTISEK

Azulenes from Artemisia plants. Vlastimil Herout and František Šorm. Czech. 85,240, Dec. 1, 1955. A mixt. of 3 kg. dry finely cut *Artemisia* and 1 kg. NaOH was dissolved in 20 l. water, heated for 18 hrs. on a steam bath, and slowly acidified with a soln. of 1.35 kg. 94% H_2SO_4 in 2 l. water. The mixt. was steam-distd. and the azulene layer sepd. to give 17.3 g. of a crude mixt. contg. 31% azulenes (I). Sepn. was facilitated by addn. of 1 l. of ligroine which was then distd. off *in vacuo*. The residue was dissolved in 100 ml. of ligroine and extd. with 30 ml. of concd. HCl. The acid soln. was dild. with 900 ml. of icewater and shaken with 250 ml. of Et_2O. After evapg. the Et_2O, the residue (5.8 g.) was taken up in ligroine and chromatographed over 60 g. Al_2O_3, yielding 5.3 g. of a pure mixt. of I, b_{15} 150-80°.

L. J. Urbánek

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Similarities in the structure of proteins. B. Keil and F. Sorm (Czech. Acad. Sci., Prague). *Congr. intern. biochim., Résumés communs., 3e Congr., Bruxelles* 1955, 16-17(1955) (in German); cf. *C.A.* 48, 13747*f*.—Proteins of similar origin and function should also show structural similarities. Chymotrypsinogen (I) and trypsinogen (II) on partial hydrolysis both yielded peptides contg. seryl-arginyl and valyl-arginyl groups. In I, the arginine is bonded to alanine and threonine. The similarities of I and II and dissimilarities in relation to other proteins were demonstrated. In studies of serum albumins, hemoglobins, and myoglobins, the proteins tended to be similar in structure in phylogenetically related species of animals (no details). Chem. similarities were related to antigenic similarities.

W. C. Tobie

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The nature of the endogenous substrate in Ehrlich ascites tumor. L. Šlechta, A. Jakubovič, and F. Šorm (Czech. Acad. Sci., Prague). *Congr. intern. biochim., Résumés communs., 3e Congr., Brussels* 1955, 126(in English); cf. *C.A.* 49, 5645*d*.—Another paper (cf. *C.A.* 49, 10493*d*) is supplemented. The respiratory quotient (RQ) for endogenous respiration was detd. in Ehrlich ascites tumor cells with and without glucose and with and without iodoacetic acid or DL-glyceraldehyde (inhibitors of carbohydrate metabolism). In all cases the respiration and RQ were nearly identical. Apparently the endogenous substrate is lipide. Changes in the fat content, and the fact that the cells contain no glycogen furnish further proof that lipides not carbohydrates are the substrate. W. C. Tobie

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SORM, F.

A further chamazulene precursor: the bitter principle of Artemisia absinthium. F. Šorm, L. Novotný, and V. Herout (Czechoslovak Acad. Sci., Prague). *Chemistry & Industry* 1955, 569; cf. *C.A.* 49, 8241c.—Extn. of *Artemisia absinthium* with petr. ether or EtOH yields a compd. (I), m. 182-8° (decompn.) (from alc.). Alk. hydrolysis of I in the presence of air, followed by acid distn., yields 13% chamazulene. The infrared spectra of I and anabsinthine (II) ($C_{15}H_{20}O_3$), m. 260°, are almost identical, but their relation is not clear. II is formed from I during extn. The infrared spectrum of II exhibits the characteristic infrared absorption of a γ-lactone.

J. A. Giles

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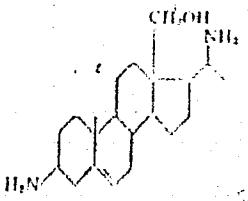
SVRM, F

Structure of holarrhimine. L. Lábler, V. Černý, and F. Sorm (Czech. Acad. Sci., Prague). *Chemistry & Industry* 1955, 1, [illegible]. The earlier assumption that holarrhimine (I) possessed a pregnane nucleus (C. I. 48, 6452) has not been verified. Dihydrotetromethylholarrhimine (II) and $SOCl_2$ gave a *quaternary chloride hydrochloride* which gave the corresponding "*dipyrate*" (III), m. 218–9° (from EtOH-H_2O). III via the *hydrochloride* and the *quaternary base* was converted to the *acetate* (IV). IV was thermally degraded to give dihydroconessine, m. 107°, $[\alpha]_D$ 58.4° ($CHCl_3$), and dihydroconessimethine, m. 61–5°. II and p-$MeC_6H_4SO_3Cl$ gave a *quaternary p-toluenesulfonate* (V), m. 218–21° (from MeOH-Me_2CO), $[\alpha]_D$ 23° (MeOH); V with NaI in Me_2CO gave $C_{24}H_{41}IN_2$ (VI), m. 301–3° (from MeOH-Me_2CO), $[\alpha]_D$ 31° (MeOH); VI with MeI gave dihydroconessine-2MeI (VII) m. 319–20° (EtOH-MeCO), $[\alpha]_D$ 25° (MeOH). Hofmann degradation of VII gave dihydroconessimethine, m. 62–4° (Me_2CO-H_2O). VIII is proposed as the structure for I.



(VIII)

Harry L. Yale

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SHORM, F. Some achievements in the chemistry of sequiterpenes. p. 441
Vol. 3, 1955 IZVESTILA. Sofiia, Bulgaria

SOURCE: East European Accessions List (EEAL) Vol. 6, No. 4--April 1957

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

Synthesis of α-bisabolol - a spasmolytically active sequiterpenic alcohol. Cesk.farm. 4 no.3:129-131 Apr 55.

1. Oddeleni prirozenych latek, Ustav organicke chemie, Ceskoslovenska akademie ved, Praha.

(ALCOHOLS,
α-bisabolol, synthesis, spasmolytic eff.)
(MUSCLE RELAXANTS,
spasmolytic eff. of α-bisabolol alcohol)

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SORM, F.

LACKOVA, E., MUDr; BELSKA, M., MUDr; SORM, F., akademik; SVEJCAR, Jiri, MUDr

Effect of testosterone propionate on infantile dystrophy. Cesk. pediat. 10 no.2:107-113 Mar 55.

1. Z I detske klin.; predn. prof. Dr. J.Svejcar.
(ABNORMALITIES
systemic, causing dystrophy in inf., ther. testosterone propionate)
(TESTOSTERONE, derivatives
propionate, ther. of dystrophies in inf.)
(KIDNEYS, diseases
exper. dystrophy in rats, eff. of testosterone propionate)

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SOKIN, I.

CZECH

10045* Organosilicon Compounds. Organosiliciumverbindungen. III. Comparison of the Reactivities of the Alkoxysilane: With the Grignard Reagent. Vergleich der Reaktivitäten der Alkoxysilane mit dem Grignardreagens. (German.) I. Barhonsky, V. Bažant and F. Sorm. *Collection of Czechoslovak Chemical Communications*, v. 20, no. 1, Feb. 1955, p. 72-81.

Reactivity of various alkoxy-groups bound to the Si during a reaction with methyl magnesium chloride. Intermediate products described. Graphs, tables, 20 ref.

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SORM, F.; AND OTHERS

On terpenes. LXV. The constitution of lactaroviolin; synthesis of 1-ethyl-4-methyl-7-isopropylazulene and 4-ethyl-1-methyl-7-isopropylazulene. In English. p. 227

Vol. 20, nol, Feb. 1955
SBORNIK CHEKHOSLOVATSKIKH KHIMICHESKIKH RABOT
Praha, Czechoslovakia

So: Eastern European Accession Vol. 5, No. 4, April 1956

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6

SORM, F.; TURSKY, T.

Effect of anions on the glutamic acid decarboxylase of brain tissue. In Russian. p. 290.

Vol. 20, no. 2, Apr. 1955
SBORNIK CHEKHOSLOVATSKIKH KHIMICHESKIKH RABOT
Praha, Czechoslovakia

So: Eastern Eufopean Accession Vol. 5, No. 4, April 1956

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652420014-6

SORM, F.

Amino acids and peptides. XV. Preparative isolation of some amino acids from gelatin hydrolyzate. Václav Holeyšovský and František Šorm (Czech. akad. věd, Prague). Chem. ~~Listy 49, 243-8;~~ Collection Czechoslov. Chem. Communs. 20, 586-92(1955)(in Russian); cf. C.A. 49, 11040d.—L-Proline (I), DL-hydroxyproline (II), L-valine (III), and a mixt. of optically active leucine and isoleucine (IV) were prepd. from gelatin by hydrolysis, esterification with iso-PrOH, distn. of the esters, hydrolysis of the esters, and partition chromatography of the acids on cellulose. Gelatin (250 g.) was dissolved in 750 ml. concd. HCl, the soln. refluxed 10 hrs. at 130–40°, decolorized with activated C, and evapd. to a sirup. The residue (331 g.) was dissolved in 750 ml. iso-PrOH at 70°, the soln. satd. with HCl at 0°, refluxed 5 hrs., and the alcohol distd. off at 20°. The esterification was repeated twice. The residual mixt. of ester hydrochlorides was treated at −7° with an equiv. amt. of iso-PrONa, then with 2 l. Et_2O, and the soln. distd. over a column at reduced pressure and 40° to give 156.3 g. of crude esters (out of a 162-g. portion of gelatin). The esters were distd. over a 7-plate column and sepd. into 5 fractions. A fraction (13.6 g.) was refluxed 8 hrs. with 272 ml. 6N HCl, the hydrolyzate evapd. (13.1 g.), and the residue dissolved in H_2O and passed over an ion exchanger. The eluate was evapd. to dryness *in vacuo* and the residue chromatographed on cellulose, using BuOH-H_2O-AcOH (4:5:1) for the isolation of I, III, and IV, and PhOH satd. with H_2O for the isolation of II. Out of 100 g. gelatin, there were obtained 6.85 g. I, 2.1 g. II, 30.2 g. III, and 2.1 g. IV. M. Hudlický

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SORM, FRANTIŠEK

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Quinolizine alkaloids. V. Dipole moments and configurations of (±)-3-lupinine and (±)-3-epilupinine. Josef Ruttský, Arnošt Reiser, and František Sorm. *Collection Czechoslov. Chem. Communs.* 20, 798-803(1955) (in English). —See *C.A.* 49, 14780i. E. J. C.

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