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STUDIES ON NEPETA RUDERALIS HAMILT. EXAMINATION OF THE PETROLEUM ETHER EXTRACTIVE OF THE FLOWERS AND STEMS

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Nepetol, a new triterpene, m.p. 180-181°C, hentriacontane and β-sitosterol have been isolated from the flowers and stems of *Nepeta ruderalis* Hamilt.

NUCLEOPHILIC SUBSTITUTION REACTIONS IN STEROID SERIES. PART I

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The reaction of tetra-n-propylammonium acetate with 3 β-mesyloxy-5α-methylmercaptocholestane (I) in methyl ethyl ketone gave 3 β-acetoxy-5α-methylmercaptocholestane (II) i.e., with retention of configuration at 3-position, while 3β-tosyloxy-5 α-hydroxycholestane (X) furnished 3 α-acetoxy-5 α-hydroxycholestane (XI) with inversion. The retention of the configuration in (I) at 3-position and the inversion of the configuration in (X) at 3-position are discussed and a mechanism is suggested.

1:1 ADDUCTS OF SF_4 WITH TETRAHYDROFURAN AND DIETHYLETHER

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The F^{19} NMR spectra of SF_4-THF and SF_4-Et_2O systems were investigated between room temperature and -70°C in the case of the former and -132°C in the case of the latter. The spectral analysis indicates that SF_4 and the ether interact at low temperatures forming 1:1 adducts. A *trans* structure has been proposed for the adducts.

BECKMANN REARRANGEMENT OF CAMPHOR AND FENCHONE OXIMES OVER PHOSPHORUS PENTOXIDE IN TOLUENE AND AUTOXIDATION OF RESULTING NITRILES

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Camphor oxime, when subjected to the Beckmann rearrangement under the action of phosphorus pentoxide in toluene, yields *dl*-α-campholene nitrile, while fenchone oxime gives a rearranged lactam in addition to *dl*-α-fencholene nitrile. Autoxidation of the two nitriles gives hydroperoxide at the tertiary carbon atom.

STUDIES ON CARBOXYMETHYLCELLULOSE

Part III.—Direct Carboxymethylation of (Impure) Jute

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Jute powder was directly carboxymethylated with sodium hydroxide and chloroacetic acid in the ethanolic medium. It appears that delignification by chloroacetic acid itself and ethanol precedes the main reaction; and the jute cellulose being available in a reactive state, it could be carboxymethylated to a higher degree (upto a maximum of 1.48). Optimum conditions have been worked out and a flow-sheet given. A by-product has been obtained which can be used as an adhesive.

CHEMICAL INVESTIGATION OF COMMIPHORA MUKUL ENGL. (BURSERACEAE)

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(Received May 28, 1966)

From an ethanolic extract of *C. mukul* Engl., two pure, crystalline compounds having m.ps, 83-84° and 137-38°, and molecular formulae $C_{30}H_{62}O$ and $C_{29}H_{50}O$ respectively have been isolated. Their acetyl and phenylurethane derivatives have been prepared. From a study of the chemical and physical characteristics of the compounds and their derivatives, the two compounds have been identified as myricyl alcohol and β-sitosterol. In addition to this, the ethanolic extract of the plant has been found to contain fifteen amino-acids which have been identified. Appreciable quantities of sucrose, glucose and fructose have also been found in the extract.

DETERMINATION OF ALKIMIDE GROUPS BY MODIFIED HERZIG-MEYER METHOD USING VAPOUR-PHASE INFRARED SPECTROSCOPY

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Vapour-phase infrared spectroscopy has been used for the quantitative determination of the alkimide groups ($N\text{-}CH_3$) by the modified Herzig-Meyer method. The main features of this method are that the reaction is carried out in a sealed tube at comparatively low temperatures and the amount of hydriodic acid used is very small. For most of the compounds under study a reaction period of about two hours is suitable. The modified method is simple, economical, accurate and much more rapid then those previously described.

THE CHEMICAL DURABILITY OF SODA-LIME-SILICA GLASSES

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(Received June 3, 1966)

All the standard tests for the determination of the chemical durability of soda-lime-silica glasses are emperical. In order to have better reproducibility it has been proposed to study the rate of attack of water on glasses. A method in which fresh water continuously comes in contact with the graded grains of glass has been employed. The results have been arbitarily classified into three grades.

SEPARATION FROM EACH OTHER OF COMPLEX MIXTURES OF PARAFFINS AND OLEFINS BY ELUTION ADSORPTION CHROMATOGRAPHY*

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(Received August 27, 1966)

Complex mixtures of paraffins and olefins (from C_9 to C_{37}), such as are found in low temperature coal tars can be separated from each other by elution adsorption chromatography on long columns of activated silica gel, using n-pentane as both solvent and eluant.

SOME PHARMACOLOGICAL ACTIONS OF AN ALKALOID ISOLATED FROM BERBERIS LYCIUM

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(Received June 27, 1966)

Some pharmacological actions of the alkaloid described here have been studied. The alkaloid has a depressant action on the isolated rabbit heart and auricles. 5 mg and 10 mg/kg doses when administered intravenously in dogs produce an acute fall in blood pressure followed immediately by a gradual recovery to initial level. The fall in blood pressure is accompanied with cardiac depression.

EFFECT OF HEAT ON THE DIGESTIBILITY OF LEAF PROTEINS

Part 1.—Toxicity of the Lipids and their Oxidation Products

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(Received April 25, 1966)

The digestibility of the leaf protein concentrates (LPC) by enzymes, decreased when they were heated at 100°C. This seems to be due to the oxidation of the highly unsaturated lipids present in the proteins. The oxidation products of the lipids and their polymers with proteins were toxic to trypsin, pepsin and the enzymes of pancreatic extract. However, the digestibility of the heated as well as the fresh protein samples increased when the protein was defatted with chloroform-methanol.

FOOD OF CERTAIN FISHES FROM STREAMS NEAR RAWALPINDI

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(Received November 26, 1965)

The purpose of this report is to correlate the food taken by fishes to organisms available in the area and to find out the frequency of food.

Out of 13 species studied, 6 had considerable debris in the gut, 7 consumed insects primarily, only *Ompok* bimaculatus lived on small fishes.

The population of fishes feeding on debris was nearly equal to those insect feeders. The stricking features of the streams of this area is that piscivorous fishes are very rare, only one species ***Ompok bimaculatus*** was found. A well balanced population of piscivorous fishes plays a key role and the ratio between them and smaller species which are of no commercial value may be maintained 1:3 or 1:4.

BOTTOM FAUNA OF THE STREAMS IN THE VICINITY OF RAWALPINDI AS RELATED TO THEIR UTILIZATION BY FISHES

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(Received November 26, 1965)

The purpose of this investigation is to determine the production of the food organisms per unit area and to correlate the utilization of the fishes to the availability of specific organisms.

The production of bottom fauna by number and weight in generally high in low gradient stations and polluted areas. Productivity of Wah streams and high gradient stations is high as compared to similar type areas in European and American streams. Heavy rains and floods reduce the number of bottom organisms. The study of the gut content of fishes of the same places revealed that 70% of fishes live on bottom organisms.

A CONSIDERATION OF THE VACUOLE IN NEUROSPORA CRASSA

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Studies were carried out on the nature of vacuoles of *Neurospora crassa* Shear and Dodge. Morphological and cytochemical studies revealed that vacuoles are indeed sacs of watery fluid containing mitrochondria and numerous dissolved substances suspended in the viscous cytoplasm. Nutritional studies have revealed that under all conditions of growth, the vacuoles of type I are a constituent of the hyphae of the fungus while the vacuoles of type II are not.

MINERALOGY OF SWAT KAOLINITE

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Glass and Ceramics Division, West Regional Laboratories, Pakistan Council of Scientific and Industrial Research, Lahore

(Received February 8, 1966)

Fifty one samples of the raw and the beneficiated Swat Kaolinite have been analysed. Two representative samples of the raw and the washed kaolinite have been prepared from 79 samples received and their DTA and X-ray studies made. On the basis of the data obtained, the mineralogy of the deposit and that of the treated kaolinite has been ascertained. X-ray studies indicate that the mineral kaolinite in the raw samples is between 15 to 20%, whereas in the washed samples it is between 45 to 50%.

MEDULLATION FINENESS AND STRENGTH CHARACTERISTICS OF THE HETEROTYPICAL FIBRES OF BIBRIK WOOL

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A sample of a Bibrik fleece of West Pakistan was sorted into the true, heterotype and kemp classes. Forty heterotypical fibres were studied for medullation, fineness, breaking stress, extension and toughness etc. The turnable knob provided for the to-and-fro motion of the slide clips in a Reichert projection microscope was graduated to measure the length of medullary fragments inside a fibre. The analysis of the results provided a significant positive correlation between the breaking force and the fibre diameter as also between the diameter and the medullation, and significant negative coefficients of the correlation between the diameter and the breaking stress, between the breaking stress and the medullation, between the breaking stress and the cross-sectional area, and between toughness and medullation. But the negative correlation between medullation and extension at break was not significant. Regression equations corresponding to the significant coefficients of correlation were derived statistically. Analysis shows that medullation adversely affectsthe processing efficiency and the durability of the wool product.

GRAVIMETRIC STUDY OF YIELD AND MEDULLATION OF BIBRIK WOOL

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(Received January 23, 1965; revised March 30, 1966)

A representative sample of a bibrik fleece of West Pakistan was sorted into three main types of fibres. The sample was degreased in benzene and studied by a chemical balance and specific gravity bottle for washing yield, density and medullation. Proportional method of sampling was employed to draw fibres from the three classes for the measurement of their stretched length. Difference in the mean length between any two classes of the fibres was significant at 0.01 level of confidence. **Fibre density also varied from class to class. The relatively low density seems to arise from malnutrition** which fosters the growth of inherited tendency of fibre medullation in Bibrik breed.

SHORT COMMUNICATION

CATION-EXCHANGE PROPERTIES OF SULPHONATED SHELLAC FURFURAL CONDENSATE

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ON THE COLOUR CHANGES EXHIBITED BY CERTAIN LACTAMS

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CHEMICAL EXAMINATION OF CROTALARIA BURHIA BUCH.-HAM.

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ALKALOIDS OF SOLANUM INCANUM LINN.

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CHEMICAL INVESTIGATION ON THE SEEDS OF HYGROPHILA SPINOSA T. ANDERS

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A SYNTHESIS OF PYRIMIDINE

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(Received May 3, 1966)

INVESTIGATIONS ON DATURA FASTUOSA LINN (SOLANACEAE)

Part II. – Isolation of Daturanolone and Fastusic Acid from the Seeds

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IMPROVEMENT OF PROTEIN VALUE OF COTTONSEED PROTEIN ISOLATE WITH FISH FLOUR AND SKIM MILK POWDER

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OCCURRENCE OF DELPHINIUM KABULIANUM AKHTAR IN WEST PAKISTAN – A NEW RECORD

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A PETROGRAPHIC STUDY OF THE MALAKAND GRANITE

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UTILISATION OF MAKRANI (BALUCHI) WOOL IN WOLLEN AND CARPET MANUFACTURE

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