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STUDIES IN RING TRANSFORMATION

Part I.—Clemmenson Reduction of 1:4-Dimethyl 1-Ethyl Cyclohexane-3:5 Dione

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Self condensation products of methyl ethyl ketone in the presence of calcium carbide have been studied. An equilibrium mixture of two isomeric dimers 5-methyl hept-4-en-3-one and 5-methyl hept-5-en-3-one is obtained which can be quantitatively estimated through separation in a gas chromatogram. A third product, a trimeric ketone, presumably 5,7-diethyl octa-4:6-diene 3-one, is also obtained through this condensation. The dimeric ketone gave dimethyl ethyl cyclohexane dione which on Clemmenson reduction gave four hydrocarbons, 1-methyl-1-ethyl-4-methylene cyclohexane, 1:4-dimethyl-1-ethyl cyclohex-2-ene, 1:3-diethyl-1-methyl cyclopent-3-ene and 1-methyl-vinyl-3-methyl-3-ethyl cyclopent-4-ene, together with three ketones, 2:4-diethyl-4-methyl cyclopentan-1-one, 2:5-dimethyl-5-ethyl cyclohexan -1-one and 4-methyl-4-ethyl-2-(ethyl-2′-enol) cyclopentan-1-one.

CONSTITUENTS OF CEDRUS DEODARA (DEĀR WOOD)
Part II.—Isolation of Dewardiol and Dewarenol

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An unsaturated diol, b.p.13 4° C./2 mm., $n_D^{24.5}$ 1.5132, α_D^{25} +41° and a polyhydric aromatic unsaturated alcohol, m.p. 218° $\alpha_D^{21.5}$ +6.5 being designated as *Dewardiol* and *Dewarenol*, respectively have been isolated from Deār Wood (*Cedrus deodara*).

USE OF MALEIC ANHYDRIDE FOR EXTENDING THE OIL-LENGTH OF COTTONSEED OIL-BASED OLEO-RESINOUS VARNISHES

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Incorporation of maleic anhydride by 'in-situ' technique is useful in increasing the oil/resin ratio of cottonseed oil-based coating compositions from 1.25 to 3.0. Varnishes prepared with an oil/resin ratio of 2.0 and maleic anhydride 7.5% by weight of the oil have superior film forming properties. The use of maleic anhydride-modified rosin esters with ordinary or maleinised cottonseed oil is not successful for extending the oil length of these varnishes.

THE EFFECT OF MAGNESIUM SULPHATE ADDITION ON THE PROPERTIES OF ARTIFICIAL POZZOLANIC CEMENTS

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Pozzolanic cements are characterised by a low rate of development of strength, low rate of heat evolution but improved resistance to sea and sulphate waters. This paper describes the effect of magnesium sulphate addition on the properties of artificial pozzolanic cement and mortars. The addition of one per cent magnesium sulphate by the weight of the artificial pozzolanic cements increases the rate of compressive strength, chemical resistance specially to the attack of magnesium sulphate solutions and heat of evolution. The water permeability of the mortars made with Portland or Pozzolanic (with or without adding magnesium sulphate) cements remains unchanged.

THE EFFECT OF THE ROOT EXTRACT OF WATER HYACINTH (EICHHORNIA SPECIOSA KUNTH), ON THE GROWTH OF MICROORGANISMS AND MASH KALAI (PHASEOLUS MUNGO VAR. ROXBURGHII), AND ON ALCOHOLIC FERMENTATION

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Roots of water hyacinth have been extracted with different solvents such as ethanol and distilled water under different conditions and their influence on the growth of Microorganisms, Mash Kalai and Alcoholic Fermentation has been studied. In all cases, the root extract enhances the growth of microorganisms and Mash Kalai and accelarates the alcoholic fermentation. Analyses of the extract showed that the ogranic substances have no effect and the inorganic constituents are responsible for the activity of enhancement of growth.

BACTERIOLOGICAL EXAMINATION OF DRINKING WATER OF KARACHI AND ISOLATION OF ENTERIC PATHOGENS

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A bacteriological examination of drinking water from various localities of Karachi was carried out and the total count as well as the most probable number of coli-aerogenes was determined for the samples collected. A seasonal variation was observed in the T.C. and M.P.N. Each of the samples was further examined for the presence of any traceable pathogen.

SPASMOLYTIC PRINCIPLE OF LAVENDULA STOECHAS LINN. AND ITS PHARMACOLOGY

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The pharmacology of *Lavendula stoechas*, Linn. (ustukhuddus) has been studied. A smooth muscle relaxant factor present in it has been isolated and identified as 7-methoxy coumarin. A synthetic sample of 7-methoxy coumarin was prepared and found to be chemically and pharmacologically identical with the isolated compound.

HARD-WAX IN THE ARCHITECTURE OF THE CROWN-SHAPED CELL

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There are two generations per year of the lac insect, the major one has a tendency to produce males in a large number, some of them seem to change their sex and become abnormal females. These are distinct from the normal apple like cells and appear crown-shaped cell. The architecture of the crown-shaped cell immediately after the insect has become adult, has been studied.

The main horizontal cervice on the equitorial region of the cell shows wax fibres arising upwards and downwards. There are six such areas all round the cell. Corresponding to each area on the outside wall is a path on the skin comprising the wax pores which secrete wax as hard fibres, and is studied under polarized light.

BLOOD GLUCOSE, HAEMOGLOBIN AND CHOLESTEROL IN THE PAKISTANI MALE ADULTS

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Blood glucose, haemoglobin and cholesterol contents of normal Pakistani male adults ranging in age between 21-50 years have been determined. The values of blood glucose and haemoglobin were noted to be somewhat lower than those reported in the literature. Plasma cholesterol concentration of subjects belonging to high income group (Group A) was substantially higher than that of low income group (Group B) and this difference is statistically significant in all the age levels of the two groups. It has also been observed that in Group "A" there is a direct correlation between age and cholesterol, but this effect is not seen in group "B". An attempt has been made to explain these findings on the basis of different dietary habits and physical activity of the two groups

STUDIES ON SOME OF THE PHYSICAL CHARACTERISTICS OF WOOL FIBRES IN DIFFERENT PARTS OF THE FLEECE OF HASHTNAGRI SHEEP

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Variations of the percentages of true, heterotypical, and medullated fibres in eleven different parts of the fleece of Hashtnagri sheep were studied and tensile strength, extension at the breaking point, diameter, and length of the fibres were determined. It was found that "shoulder wool" contained the maximum number of true fibres while heterotypical and medullated fibres were in excess in the "belly wool". The tensile strength of the true fibres was greatest in the "stained wool" while that of heterotypical and medullated was maximum in "fleece wool" and "brisket wool", respectively. "Britch wool", "belly wool", and "back wool" had maximum fibre length. In certain cases extension at the breaking point exceeds 30% elongation. The tensile strength and the respective diameters of the fibres of the different parts were not related

POLLEN MORPHOLOGY OF SOME PAKISTANI MEDICINAL PLANTS

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Pollen morphology of sixty-five Pakistani medicinal plants, which are used in different systems of medicine, have been studied. The pollen grains of one plant i.e. *Albizzia lebbek* occur in polyads, while in all other plants studied these occur singly. The pollen grains are of various shapes i.e. varying from spheroidal to prolate with polar or lateral germinal exits. The pollen grains of various plants also vary in thickness of their exine. The exine may be, with or without ornamentations. The different measurements of the pollen grains recorded are: equatorial diameter, apocolpium diameter, width of colpi at the equator and with the description of the end of colpi and thickness of exine with comparison of sexine and nexine

PHARMACOGNOSTIC STUDY OF THE STEM AND LEAF OF PAEDERIA FOETIDA LINN.

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A taxonomic description, and the macroscopy and microscopy of the stem and leaf of *Paederia foetida* Linn. used in the indigenous systems of medicine are described. The diagnostic microscopic feature of the leaf are: presence of clustered acicular crystals in the long sausage shaped cells in the mesophyll, spirally thickened tracheids in the mesophyll and uniseriate hairs on the upper epidermis. Usually there are two to three layers of hypodermis in the petiole. The stomata which are mostly found in the lower side of the leaves are accompanied by two subsidiary cells which are placed parallel to the pore. The stem is characterised by the presence of uniseriate epidermal hairs. Two to three layers of stone cells or sclereids which constitute the pericyclic fibres are present below the endodermis. Xylem bundles are simply collateral type and the vessels usually consist of simple perforations. Pith cells contain acicular crystals. Fat bodies, mucilage and resin are present in the leaves and in stipular sheaths.[1]

BOTANICAL PHARMACOGNOSTIC STUDY OF RHAZYA STRICTA DECAISNE
Part II.—Root

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The macroscopic and microscopic characters of the root of *Rhazya stricta* Decaisne are described. The root is characterized by the presence of large amount of starch in the cortical cells and the presence of large amount of included phloem bands in the secondary xylem. Presence of large amount of laticifers and the absence of crystals in the root tissues are the distinguishing characters.

SHORT COMMUNICATION

A NEW ALKALOID FROM ALANGIUM LAMARCKII THWAITES

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COMPOSITION OF TE OIL OF GREWIA ASIATICA (PHALSA) SEEDS

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MICRO AND SEMIMICRO NON-DISTILLATION KJELDAHL METHOD WITH SEALED TUBE DIGESTIONS

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ANTIMONY (III) CARBOHYDRATE COMPLEXES

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HISTROCHEMICAL LOCLAIZATION OF POLYSACCHARIDES IN THE MID-GUT OF DESEART LOCUST, SCHITOCERCA GREGARIA (FORSKAL)

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(Received September 6, 1963)

THE TOXICITY OF MAKROLIN AS COMPARED WITH OTHER CHLORINATED INSECTICDES AGAINST ADULT DESERT LOCUST, SCHISTOCERCA GREGARIA

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