

The full details are available in the author's report to the National Institute of Sciences of India.

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1. Sundara Rao, *Proc. Ind. Acad. Sci.*, 1949,
29, 352.

EFFECT OF ALKALI CHLORIDES ON THE INTENSITY OF THE CYANOGEN BANDS IN CARBON ARC

INTRODUCTION

THE Ga line 4172 Å lies within the region of one of the systems of the CN bands which extends from 4153 Å to 4216 Å. The region is blackened by these bands and hence makes the detection of the Ga lines difficult. An attempt has been made to diminish the intensity of these CN bands by the addition of alkali halides to the arc.

EXPERIMENTAL

A procedure differing from that of Ashton¹ was followed. Carbon electrodes were coated with alkali chlorides by dipping them vertically in saturated solutions and evaporating to dryness. Solid adherents if any were removed by washing. The electrodes were arced for 60 seconds at 6 amperes using 220 volt D.C., through watercooled control. The arc was kept fixed at 4 mm. Pure carbon electrodes were also arced under identical conditions, and all photographs were taken with a grating spectrograph.

Band intensity measurement in the negative was carried out by a photocell and a microammeter. Due to rotational structure of the bands the intensity was averaged over a small range. Measurement of intensity gave an estimate on an arbitrary scale. The results indicate that the suppression is most effective in the case of Cs and least for Li.

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September 9, 1949.

1. Ashton, *Jour. Soc. Chem. Industry*, 1949,
5, 185.

A NEW REACTION FOR THE SYNTHESIS OF CHROMONES AND ISOFLAVONES

THE interaction of *o*-hydroxyphenyl benzyl ketones with ethyl orthoformate in boiling pyridine containing a little piperidine gives isoflavones. Thus *a*-naphthaisoflavone is obtained from 2-phenylacetyl-1-naphthol, and 7-hydroxyisoflavone from 2:4-dihydroxyphenyl benzyl ketone in excellent yields. The ethyl orthoformate condensation can also be effected in acetic anhydride and zinc chloride, but under the conditions so far examined, the yields are poor. With 2:4:6-trihydroxyphenyl benzyl ketone, ethyl orthoformate gives deeply coloured, complex condensation products. With 2-acetyl-1-naphthol, the naphthachromone is obtained, together with a bright yellow by-product, m.p. 160°. The constitution of this compound and the mechanism of the reaction are being studied.

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EFFECT OF PENICILLIN ON THE BACTERIAL CONTAMINANTS OF VACCINE LYMPH (CALF LYMPH)

HEAVY bacterial contamination in vaccine lymph (calf lymph) is inevitable during the process of its manufacture. None of the methods in use to bring about the reduction of its bacterial flora is satisfactory. Penicillin has recently been tried for the purpose, with spectacularly encouraging results. Our experience however in this direction has been disappointing. The use of such penicillin-treated lymphs is risky as penicillin not only does not bring about any bacterial reduction, but, what is more, gives extremely deceptive results. Most workers seem to have based their results without taking into consideration the interference of penicillin in the tests.

In one of the author's experiments on penicillin-treated lymphs, there was no growth on agar plates before removal of penicillin but after its complete removal they gave numerous organisms; the organisms are not killed but only inhibited by penicillin. Bactericidal action of penicillin is known to be maximum during the growth

phase of an organism in a nutrient medium while it is little or negligible on 'resting' organisms in non-nutrient fluids. In the vaccine lymph the organisms are in 'resting' phase in a non-nutrient medium and it is not strange that penicillin does not bring about any bacterial reduction in vaccine lymph.

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September 1, 1949.

SYNTHESIS OF YOHIMBINE AND RELATED RING STRUCTURES

THE recent publication by Swan¹ reporting the unsuccessful attempt to ring close 3-(2'-O-Hydroxymethyl-phenylacetamido-ethyl)-indole by heating under reflux for an hour, in an indifferent atmosphere, with phosphoryl chloride makes it necessary for us to publish this note. For some time past, one of us (Dr. K. N. Menon) has been carrying out a number of experiments to synthesise various members of the iso-quinoline and indole groups employing oxygen-alkyl substituted iso-chroman-3-one as the condensing unit. The successful development of the method has much interest in the direction of biogenesis of plant alkaloids according to Sir Robert Robinson's² classical theory. A large number of β -phenyl-ethylamines and iso-chroman-3-ones have been condensed and ring closed. The very heavy teaching duties of Dr. Menon has prevented more rapid progress and it is hoped grace time will be allowed to enable this laboratory to complete this work. In connection with this general scheme, synthesis in the Yohimbine group was taken up and as we had accumulated 3:4-methylene-dioxy-iso-chroman-3-one, we condensed this with tryptamine. The resulting amide gave no concrete result on treatment with phosphoryl chloride or phosphorous trichloride using benzene and its homologues as the solvent. Resinification under the action of hydrogen chloride seems to be the difficulty in this method. Using phosphorous pentoxide has given us positive results and we propose to submit the product obtained to very rigid examination before communicating the full account of this work.

The work of Jost,³ of Karrer and Enslin⁴ on corynanthein and Woodward and Mc-

Lamore's⁵ on the synthesis of sempervirine metho-salts by an elegantly unambiguous route, makes progress on the synthetical work we have undertaken of great interest.

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October 15, 1949.

1. *J. C. S.*, 1949, 1720. 2. *Ibid.*, 1917, 111, 876; 1931, 3163; 1932, 789; 1933, 280; 1936, 1079.
3. *Helv. Chem. Acta.*, 1949, 32, 1297. 4. *Ibid.*, 1949, 32, 1390. 5. *J. A. C. S.*, 1949, 71, 379.

NOTE "ON A CERTAIN DISTRIBUTION IN THE THEORY OF SAMPLING"

It is claimed that the distribution function of the variate

$$\xi = \frac{a_1 m_1 + a_2 m_2 + \dots + a_i m_i}{\sqrt{\{n_1 s_1^2 + \dots + n_i s_i^2\}}}$$

has been derived¹ without any restrictions on the constants a_i and that Simpson's theorem² is deducible from it as a special case.

Here, i = number of the samples drawn
 n_i = size of i th sample
 m_i = mean of i th sample
 s_i^2 = variance of i th sample
 a_i = constants.

The results and the proof given by the author are not new. Kempthorne³ has pointed out that even Simpson's theorem is not new though the proof is interesting. Distributions of $\sum a_i m_i$, $\sqrt{\sum n_i s_i^2}$ and their ratio are available in some of the text-books on Advanced Statistics.^{4,5}

Mysore,
July 15, 1949.

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1. Krishna Sastry, K. V., "On a certain distribution in the Theory of Sampling," *Nat. Inst. Sci. Ind.*, 12, 8, 427-28. 2. Simpson, Harold, "On a theorem concerning sampling," *J. R. S. S.*, 1943, 36, 266. 3. O. Kempthorne, "Comments on the previous note," *ibid.*, 1944, 58. 4. Cramer, "Random variables and Probability Distributions", *Cambridge Tracts in Mathematics and Physics*, 1937, 36, 48. 5. Kendal, *Advanced Statistics*, 1945, 1, Ex. 10-11, 253.