we say that on the limit P for random chance the two samples were not drawn from the same population.

It should be noted that this test is accurate when all the $2n$ individuals are different. It will, however, be shown in a fuller paper under preparation that even when two or more of the drawn individuals are alike, this test is true to a high degree of approximation in the long run.

We will now apply this test to the following case:—

N. A. F. Moos[2] showed that the observed value of P_0 in the year T during the period 1867–1904 can be "best" represented by $P_0 = -645 \cdot 10^{-5} - 68 \cdot 10^{-7} t$, where $t = T - 1865$. In other words, this implied a trend in the same direction.

To test the reality of the trend, the observed values of P_0 were divided into two groups from 1867–1885 in one group and the rest in the other.

The median of the 38 values $= -660 \times 10^{-5}$.

In the second sample (from 1867–85), which is the inferior sample, there are only 10 values less than the median.

Using 5 per cent. as our limit for random chance, *i.e.*, putting f, in equation I, equal to 0·05 and $n = 19$, we solve the equation for m. The value of $m = 14$.

Since the number of inferior individuals in the inferior sample is less than 14, we deduce that the two samples could have reasonably been obtained from the same population. That is to say, on the 5 per cent. limit for random chance the observed trend is not significant.

In conclusion it is hoped that the fuller paper, which is under preparation, will be sent for publication elsewhere before long.

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October 28, 1940.

[1] S. R. Savur, *Proc. Ind. Acad. Sci.*, (A.), 1937, pp. 569.

[2] N. A. F. Moos, *Bombay Magnetic Observations*. 1846–1905, Part I. See page 5.

Constitution of Butrin

Butrin, the glycoside of the flavanone, butin, was isolated by Lal and Dutt[1] from the flowers of *Butea frondosa*. When hydrolysed with dilute sulphuric acid, it gives rise to a molecule of butin and two molecules of glucose. On treatment with excess of ethyl iodide and potassium carbonate, it was reported by Lal[2] to produce a diethyl ether. Assuming that under the conditions of the experiment only phenolic hydroxyl groups are attacked by ethyl iodide, he concluded that butrin was a bioside. In view of certain peculiar features exhibited by butrin its constitution interested us in connection with a general study of the constitution of anthoxanthin glycosides. On treatment with diazomethane, butrin yielded only a monomethyl ether and the latter on hydrolysis gave rise to a monomethyl derivative of butein. Hence the glycoside seems to be not a bioside but a diglucoside of butin, having the two sugar nuclei in two different positions. Experiments aimed at definitely establishing the positions of the glucose groups are under progress. Details will be published elsewhere.

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[1] Lal and Dutt, *J. I. C. S.*, 1935, **12**, 262.

[2] Lal, *J. C. S.*, 1937, 1562.

Magnetic Susceptibilities of Some Halides

The magnetic susceptibilities of a number of fluorides, chlorides, bromides and iodides have been studied by various investigators.[1,2,3] However, several halides have still to be studied. A detailed investigation of some of these substances, has been started in this laboratory. Such an information not only fills the existing gap in our knowledge but also reveals interesting properties.

Mr. Chowdhery has already measured[4] the susceptibilities of some fluorides using Gouy's

method. The present investigation is a continuation of his work and some chlorides and oxychlorides have been studied. The experimental arrangement was the same as that used by him.

We give below the results obtained for the substances. The firm from which each of the following chemicals was obtained is given after the name of the chemical.

Compound	Temperature °C.	$X_m \times 10^6$
1. SbOCl (Antimony oxychloride) (British Drug House)	33·0	− 2·30
2. Carbon trichlorate $(CClO_3)_2$ (Theodre Schuchardt)	32·4	− 2·44
3. $PrCl_6 + H_2O$ (Praseodymium chloride) (Haen Works)	34·1	+ 0·18
4. $(C_5H_{11})_4NCl$ (Tetra-iso-amylammonium chloride) (Haen Works)	33·6	− 5·27
5. $C_2H_4(NH_2)_2$ HCl (Ethyldiamin hydrochloride) (Theodre Schuchardt)	30·6	− 0·79
6. Cr_2Cl_6 + aq (Chromic chloride) (Theodre Schuchardt)	31·0	+ 3·98
7. $FeCl_2 + H_2O$ (Iron chloride) (Haen Works)	34·2	+ 55·56
8. $CrCl_2$ (Chromium chloride) (Theodre Schuchardt)	33·8	+ 30·91
9. $TaCl_5$ (Tantalum chloride Sublimed) (Haen Works)	31·0	+ 0·39
10. $ThCl_4 + 8H_2O$ (Thorium chloride) (Merck)	32·2	− 0·34

Detailed account will be published elsewhere.

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October 28, 1940.

[1] A. T. C., Paris, 1937, **8**.

[2] *Ibid.*, 1937, **17**.

[3] Landoldt and Bornstein, *Table of Constants*, Springer, Berlin, 1923–32.

[4] A. A. Chowdhery, Aligarh Muslim University, *M.Sc. Dissertation*, 1940; *Curr. Sci.*, 1939, **8**, 550.

Vitamin Requirements of the Rice Moth *Corcyra cephalonica*, Staint (Lep.)

THE rice moth is essentially an insect which has a special preference to the starch-rich cereals. This significant circumstance justifies two assumptions. (1) Carbohydrate metabolism must dominate its life process, and (2) Vitamin B_1 requirements of the insect must be indispensable and substantial.

Experiments with a view to investigate the validity of these assumptions, were conducted. An attempt was made to maintain the insects on sago, which is obtained from the pith of palms and cycads in India.

The percentages of the more important constituents of sago and rice are given in Table I, which reveals the low content of protein, fat

TABLE I

	Sago	Rice
Protein	0·13	7·3
Fat	0·10	1·6
Nitrogen-free Extract	78·16	73·3
Ash	0·16	1·0

and minerals in sago. It was, therefore, thought that sago might constitute a "basal" diet for nutrition work on these insects.

Insects, in batches of 25, were fed on sago; their weights taken at intervals. After 64 days, the insects were given sago which was supplemented by dried yeast to the extent of about 10 per cent. Several other batches of insects were started on a diet containing autoclaved (Vitamin B_1-free) yeast and after maintaining them for different periods on a Vitamin B_1-free diet, they were changed over to a Vitamin B_1 diet (provided in the form of unautoclaved yeast, 10 per cent.) after 30, 60 and 120 days respectively. Two batches of insects, were fed on the full Vitamin B_1 diet from the very commencement. The results are graphically represented in Fig. 1.