of divalent ions. Such reservoirs may be the source of the intracellular free calcium released by stimulated cells[4].

D. A. WEBB
(Overseas Scholar of the Royal Commission of 1851).
J. F. DANIELLI
(Beit Memorial Medical Research Fellow).

Sir William Dunn Institute,
Tennis Court Road,
Cambridge.
July 11.

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Cosmic Rays and Poisson's Law

LET us consider a great number n of events of a sequence the mean value of which is $\bar{n}$. If these events obey Poisson's law, the probability of actual realization of the nth event is

$$P(n) = \frac{\bar{n}^n}{n!} e^{-\bar{n}}$$

In the case of cosmic rays, $\bar{n}$ would be the mean value of the number of cosmic rays registered during the same interval of time by a counter during a long interval, and n any number of rays registered in one interval by the same counter, the probability $P(n)$ of which is to be ascertained.

But Poisson's formula can be applied only if: (1) the probability of the event considered is very small (less than 0·1); (2) the frequency is never less than 10; (3) the events considered are independent.

The two first conditions are certainly fulfilled by the numbers of cosmic rays, the second one depending on the time of computation only. Therefore we shall deal with the third condition, which is essential. Indeed, it often occurs that a slight dependence entails extensive modification in the theoretical distribution based on the independence.

We tried to show the independence of the numbers of cosmic rays registered during the same interval of time, which was a quarter of a minute. The following method[1] was adopted. The registered values were grouped in three series: 'chronological series' (sequence of values as obtained); 'ordinal series' (sequence of values classified in increasing order); and 'series of consecutive values' (sequence of values which follows each observed value). Each of the two latter series is decomposed into decils, that is, into ten equal parts, numbered from I to 10, and from I to X. The probability that one value taken at random in the chronological series should belong to either decil of either group must be 1 : 10. Consequently, if there is independence, the probability that the same value should belong at the same time to two decils, one in the 1–10 group, the other in the I–X group, should be 1 : 100.

We had 1,600 numbers registered. Therefore, should we have each number with two indexes, one taken from the 1–10 group and the other from the I–X group, the result would be 100 groups of values, allowing for Bernoullian fluctuation $\mu^2 = npq = 16$.

We arranged the following table:

	I	II	III	IV	V	VI	VII	VIII	IX	X
1	24	13	18	17	12	21	16	10	13	16
2	22	21	22	8	22	11	17	14	14	9
3	15	10	24	18	19	18	8	21	17	9
4	19	11	13	28	4	17	25	14	11	18
5	6	19	19	9	34	11	6	19	14	23
6	20	19	11	18	5	28	11	12	17	18
7	16	9	12	16	9	20	22	17	20	18
8	13	21	10	13	25	12	16	16	19	15
9	12	20	18	8	22	9	19	19	16	17
10	12	17	13	25	7	12	20	18	19	17

The table shows that 53 values are outside the theoretical limit 16 ± 3. The difference is of the same order of magnitude as the one M. Ferber found for the intervals between the emissions of the alpha particles of polonium[2].

The experimental proof of the hypothesis of independence has not therefore been obtained; and it seems that there is a correlation which, though feeble, renders doubtful the legitimacy of application of Poisson's law to the registered numbers of cosmic rays. On the other hand, the existence of four hyponormal groups (5–VI, VII), (6–VII, VIII), (7–II, III), (10–V, VI) confirms our conclusions, as according to the hypothesis of independence only one of these groups was to be expected.

Finally, the high values in the squares of the main diagonal of the table suggest the existence of many pairs of consecutive values of the same order of magnitude.

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A. GIBERT.

Laboratório de Física,
University of Lisbon.
July 11.

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Etching Reagent for Chromite

THE resistant nature of chromite to all the usual etching reagents used in polished section examination is well known. Etch patterns on chromite would assist in the determination of the orientation of interlocking and anhedral grains in a rock and in the recognition of zoning. A search for a suitable reagent has revealed that chromite can be etched by treatment with concentrated perchloric acid, which is not mentioned in standard works on mineragraphy.

Polished sections approximately 2 cm. square were prepared on a billiard cloth lap or on a Graton-Vanderwilt polishing machine. The former method gives a satisfactory polish with most chromite specimens and is preferred, as it is necessary, before etching, to remove the bakelite mount used in the latter method.

The polished section is placed face downwards in a crucible of a size such that the specimen does not quite rest on the bottom. Sufficient perchloric acid