

The diagram shows, for each year of observation, the percentage frequency of the individuals according to the number of rings on their scales, the figures along the abscissæ denoting the number of rings, while the corresponding ordinates denote the percentages of all the individuals falling in each ring group.

The most prominent feature of this diagram is the regular movement of the primary mode (*a*) from 1908-14, as well as of the secondary mode (*b*) from 1907-09.

While in 1908 the individuals having 4 rings were the most numerous, in 1909 those having 5 rings, in 1910 those having 6 rings, in 1911 those having 7 rings, in 1912 those having 8 rings, in 1913 those having 9 rings, and in 1914 those having 10 rings predominate.

In the same manner the secondary mode (*b*), appearing in 1907 by the relative numerical strength of group 8, moves one class to the right for each of the years 1908 and 1909.

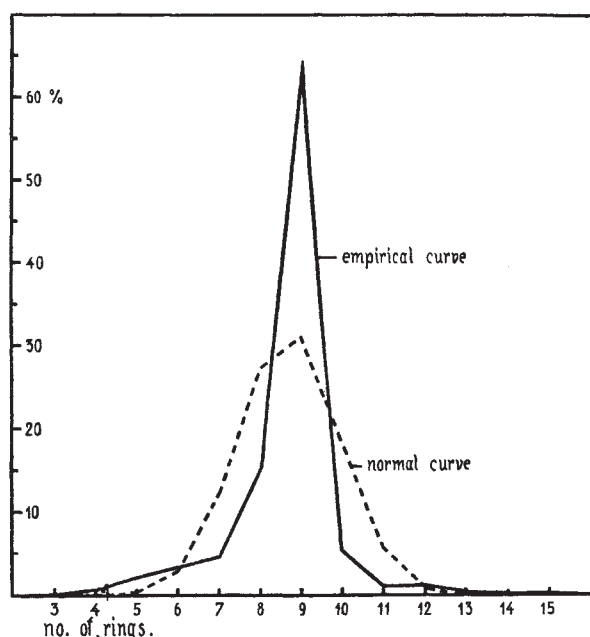


FIG. 2.—Comparison between the empirical ring curve for 1913 (in Fig. 1) and its corresponding normal variation curve.

It seems difficult to explain this regular movement of the modes, unless we assume that the two prominent modes represent two relatively abundant year-classes of herrings.

If this be true, then the material investigated leads to the conclusion that great fluctuations occur in the stock of Norwegian herrings with regard to the relative abundance of the different year-classes. That the magnitude of these fluctuations is astonishing and "very hard to imagine," is by no means an argument against the observed facts.

Prof. D'Arcy Thompson emphasises the regularity with which the so-called year-groups arrange themselves in a unimodal skew-curve, "just as the same fish group themselves also, according to size, in a unimodal but more normal curve." It seems to him "statistically improbable that a dozen separate generations of herrings, spawned in as many years, should have entered into the formation of the composite shoal in these curiously and regularly graded proportions." He finds it much easier to explain this fact

by assuming that all the herrings (in a sample) were of the same age and origin, and that consequently the individual herrings vary about a certain modal number of rings, just as they also vary in a normal fashion about a certain modal size. He also emphasises the probability of an irregular age-curve for a population where large and irregular fluctuations occur in the annual birth-rate.

It might have been expected, then, that Prof. D'Arcy Thompson would have subjected the material published to a statistical analysis in order to convince himself of the correctness of his opinion regarding the similarity between the age-curves and the normal curves so usual in biology. He would then have found that no age-curve in the whole material of Norwegian herrings follows the usual law for biological variation. In some cases the age-curves present themselves by mere inspection as irregular (see Fig. 1, 1907, 1908, and 1909), while in other cases (when the curve is unimodal, as in Fig. 1, 1910-14) they are so entirely different from the normal frequency curve that it is totally impossible to replace the empirical curve by the corresponding theoretical one. This will be apparent from Fig. 2, giving the empirical age-curve for Norwegian herrings in 1913 (see Fig. 1) together with the normal curve for the same number of individuals, the same average and standard deviation, and the same arrangement of classes. In the following table the same data are given numerically:

Number of scale rings	Empirical frequencies in percentages	Theoretical frequencies in percentages	Difference empirical—theoretical values
3	0.1	0.0	0.1
4	0.7	0.0	0.7
5	2.2	0.4	1.8
6	3.4	3.0	0.4
7	4.8	12.5	-7.7
8	15.4	27.4	-12.0
9	64.7	31.2	33.5
10	5.2	18.5	-13.3
11	1.2	5.8	-4.6
12	1.3	0.9	0.4
13	0.5	0.1	0.4
14	0.2	0.0	0.2
15	0.2	0.0	0.2

The dissimilarity of the two curves is, in fact, so great as to exclude any idea of the age-curve following the usual law for biological variation. The feature that the curve is apparently unimodal, is due to the fact that one single group is so overwhelmingly abundant as to depress to a certain degree the irregularities actually existing in the frequencies of the other groups. By inspection of the age-curve for 1914 (see Fig. 1) it will be observed that the frequency of group 11, lying close to the modal group, is less than for the more extreme groups 6, 7, and 8.

For these reasons, as well as because of the regular movement of the modes, it seems to us impossible to explain the observed facts as a result of common variation, even if the help of a mathematical statistician were enlisted.

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Scientific Work and the War.

DR. CALMAN'S plea (NATURE, October 22, p. 198) for the continuance as usual of the work of our learned societies, or even a wider plea for the calm prosecution of all our scientific studies, may be supported on many grounds, but the only one that I wish to emphasise is the moral effect thus produced upon those neutral nations whom our opponents seek to delude into the belief that we are panic-stricken. To the

reality of this effect the following sentences in a letter just received from a correspondent in Florence bear witness:—"... e sapendo, d'altra parte, che l'Inghilterra sta fortemente sostenendo la sua bella lotta, senza perdere il tradizionale sangue freddo; per modo che la vita continua costà quasi inalterata. La regolarità, con la quale i periodici scientifici continuano ad apparire ne é la prova migliore." F. A. B.

THE CARE OF THE WOUNDED.

A FURTHER paper by Medical Inspector-General Delorme was read before the Paris Academy of Sciences on September 28, on the general subject of the treatment of wounds in war (*Comptes rendus de l'Académie des Sciences*, October 5, 1914).

The paper begins with a very welcome statement that the health of the French Army is excellent. "The persistent mildness of the weather since the war began, the extreme carefulness of the Government, the watchfulness of the Commands, from the lowest to the highest,—such fatherly watchfulness as you would not find, so intense and so alert, in any other campaign—the organisation and the regular methodical active working of the Army Medical Service, the great care given to the food-supply, the sites chosen for the troops—all these, up to now, have resulted in the maintenance of a perfect sanitary condition. The wounded Frenchman is a healthy man. Diseases are at a very low point. . . . Dysentery and typhoid are almost unknown: the proportion of cases has seemed to me to be even less than in time of peace." And, he adds, the spirit of the wounded men is perfect: it plays its great part in the work of a speedy and permanent recovery, "ce moral, qui est la traduction fidèle et tangible de la vitalité de l'homme." It is not the wounded who are broken-hearted: "le trouble n'est que dans le cœur des mères."

We are thankful to know that the general health of the French Army, and of our own Expeditionary Force, is thoroughly satisfactory. How long this blessing will last we do not know. But we may be quite certain that the Army Medical Services are working day and night for it, not in vain.

General Delorme's paper goes on to consider what more can be done for the wounded. He urges, very justly, that the large proportion of shrapnel-wounds and shell-wounds indicates the advisability of having a rather elaborate field-hospital system, as near the front as may be. Wounds of this kind, of course, are infected from the very moment of their occurrence: and it is a matter of the highest importance that they should be attended to, very thoroughly, at the earliest moment possible. The "first dressing" which may suffice for a cleaner wound, made by a bullet, will not suffice for them. The occasion may require the use of X-rays, the extraction of foreign bodies, the immediate administration of a protective serum or vaccine, and so forth: none of them to be delayed.

In the discussion of this communication the speakers were Laveran, Roux, and Landouzy;

and the discussion was no less interesting than the paper. One, and that the worst, consequence of these infected wounds is, happily, under the control of a protective serum-treatment; and we may be sure that the money to provide that treatment will not be lacking. It is not simply a question of money: it is a question of what can be done, in this colossal fighting, to avoid loss of time in dealing thoroughly with so many infected wounds. As Landouzy says—and it is pleasant for an Englishman to read—"Il faut que, dans les armées des pays de Pasteur et de Lister, la Chirurgie active soit concentrée en partie et résolument vers l'avant, si l'on veut que l'asepsie et l'antisepsie des blessures de guerre soient possibles." STEPHEN PAGET.

THE TRANSIT OF MERCURY ON NOVEMBER 7, 1914.

MERCURY is one of the two planets which revolves round the sun in an orbit smaller than that of our earth, and consequently at a time of inferior conjunction generally passes just to the north or south of the sun. The reason why it does not always pass exactly between the sun and us is because its orbit is inclined at an angle of 7 degrees to the plane of the ecliptic, and the planet is only twice during a revolution at the cutting points or nodes, and is not necessarily at one of these points when passing on the near side of the sun.

When, however, conjunction does occur and the planet is near a node, it is seen to cross the sun as a small black spot, but it requires the use of a telescope to discern it. In May and November of each year the earth passes the nodal points, and it is only during these months that a transit can occur. On November 7 a very favourable transit will take place, and the whole phenomenon from start to finish will be visible from these islands during the interval comprising the two hours on each side of noon. Transits of Mercury are sufficiently rare to attract attention, as only about twelve occur in a century. The last one took place on November 12, 1907, and we shall have to wait until 1924, May 7, before another will be on view.

The planet makes first contact with the sun at 9h. 57m. 15s. on the morning of November 7 at a point on the sun's limb 156° from the north point of the sun counting towards the east. It takes the planet 2m. 14s. to place his whole disc completely on the sun. While it does not actually cross the centre of the solar disc, the time of its least distance from that centre is 12h. 3m. 22s. p.m. At 2h. 7m. 16s. p.m. the planet will have reached the sun's limb again, touching it at a point 255° from the north point, still reckoning in the same direction towards the east; it will take again 2m. 14s. to pass clear of the sun. It should be noted that the above times, although accurate enough for general observers, refer to the phenomenon as observed from the centre of the earth, and not as seen from the earth's surface.