

### Our Winters in Relation to Brückner's Cycle.

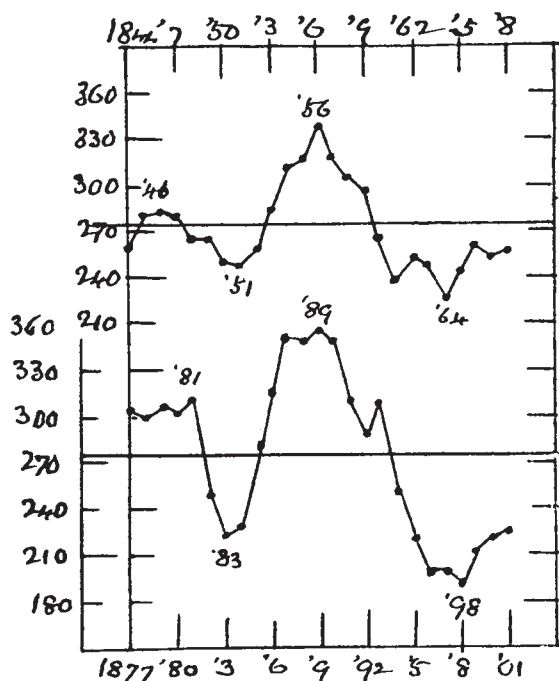
It was said in Bacon's time that every thirty-five years "the same kind of suite of years and weathers comes about again" (see his essay "Of Vicissitude of Things"), and the important researches of Brückner on this subject are now receiving considerable attention.

The value, 35 years, as used by Brückner, is, of course, an average. The interval from centre to centre of his cold and wet periods (or the opposite) is sometimes as much as 40, sometimes as little as 30. It has been noted, further, that 35 is very nearly three times the sun-spot cycle of 11.1 years.

Now if we look into the variation of certain weather-elements at Greenwich since 1841, it may, I think, be truly said to-day that the same kind of weather has come round again after about 33 years. Let us take e.g. our winter seasons as measured by the total number of frost days from September to May.

In the upper curve of the diagram herewith, each year point represents the sum of frost days in five winters so understood; the first (1844) for winters ending 1842-46, the second, winters ending 1843-47, and so on.

Similarly, in the lower curve, each point represents a five-winter group, but thirty-three years later, commencing



Curve showing the variation of frost days from five-year sums for the period 1842-1902.

with 1877, and ending with 1901 (which includes last winter).

There is obviously a general correspondence between these curves; high values in one matched with high values in the other, and low with low. Twenty-five pairs of values being thus compared, there are only four in which the members of the pair are on opposite sides of the average line (273).

Again, we have, in general,

Diminishing cold ...	...	...	1846-51 (5 years)
Increasing cold ...	...	...	1879-83 (4 " )
Diminishing cold ...	...	...	1851-56 (5 " )
Increasing cold ...	...	...	1883-89 (6 " )
Diminishing cold ...	...	...	1856-64 (8 " )
Increasing cold ...	...	...	1889-98 (9 " )

From these last dates there is a rise.

The earlier curve might thus be considered a kind of programme for the series of winters commencing 33 years

after the first. It will be interesting, I think, to see how far it continues to be so in the future.

The winters about 1856 and 1889 appear to have been conspicuously cold times. We might, perhaps, anticipate another such time in the early 'twenties, the curve not rising so high between, though, of course, individual winters might be very severe. This seems to be suggested by the course of the curve after 1868, but the correspondence may perhaps fail.

Other examples of such recurrence, corresponding more or less closely, might be given. The long record of Rothesay rainfall (from 1800) will be found worth treatment in this way; conspicuously dry times occur about 1822, 1855, and 1887, and the smoothed curve from 1835 to date may be said to repeat in its main features that from 1802 to 1867.

ALEX. B. MACDOWALL.

### An Ant Robbed by a Lizard.

THE following account of the robbery from an ant by a lizard may interest some of your readers.

While walking along the main road on the outskirts of Bordighera yesterday morning, I noticed a strange-looking insect moving across it in a peculiar way. On getting nearer, I saw that what had attracted my notice was a black ant—about an inch long with brown wings—dragging a cricket bigger than itself. It held the cricket by the head, and as the ant moved backwards it drew the cricket towards it. While doing so it entered the shadow cast by my umbrella, and instantly released its hold and got out of the shadow, but finding there was no danger it returned and seized its prey again by the head, and recommenced its backward movement. A low wall ran alongside the road, and when the ant got within six feet of it a common brown lizard appeared on the top of the wall and evidently soon caught sight of the ant, for it ran quickly down the wall and to within two feet of it, when it crouched for a second or two like a cat ready to spring, and then charged the ant, apparently butting the cricket free with its head. Before the ant could regain its hold the lizard seized the cricket in its mouth, and darted up the wall in the direction from which it originally appeared on the scene, leaving the ant running round and round, moving its wings in an agitated manner, vainly searching for its lost prey.

J. W. STACK.

Villa Mona, Bordighera, September 1.

### A NEW MECHANICAL THEORY OF THE ÆTHER.<sup>1</sup>

THIS memoir was communicated to the Royal Society in February, 1902, and has now been issued in the dual form of a contribution to the *Philosophical Transactions* and a volume of Prof. Osborne Reynolds's collected papers.

It may safely be described as one of the most remarkable attempts that have been made of recent years to formulate a dynamical system capable of accounting for all physical phenomena at present known. A theory such as is here set forth may not improbably play the same part in modern science that was assumed by the atomic theory and the kinetic theory of gases in the science of the time when these theories were propounded.

If we suppose the ultimate particles—Prof. Reynolds calls them "grains"—constituting the material universe to be either spheres, or what comes to the same thing, point atoms behaving in the same manner as uniform smooth spheres, then it is impossible to assume these grains to be of equal size and distributed at random through space without assuming them (as in the kinetic theory of gases) to be in motion among themselves. On the other hand, a medium in which the motion of the different grains among themselves partakes of the nature of diffusion does not lend

<sup>1</sup> "The Sub-Mechanics of the Universe." By Osborne Reynolds, M.A., F.R.S., LL.D., M.Inst.C.E. Pp. xvii + 256. (Cambridge University Press: Published for the Royal Society of London, 1903.) Price 10s. 6d. net.