New Recording Anemometers.

WE have received a communication from Prof. W. W. Shoulejkin, of the Institute of Physics and Biophysics of Moscow, giving particulars of apparatus which he has designed for automatic measurement of the two following quantities :

(1) The amount of air that passes in a given interval of time across a unit of area normal to the instantaneous flow of the wind. This is a modification of the ordinary Robinson anemometer, arranged so that a paper tape is unrolled by an amount dependent upon the flow required.

(2) The instantaneous components of unit wind velocity in any two horizontal directions at right angles, or, in other words, the values of cos θ and sin θ, where θ is the angle between the direction of the wind and any fixed horizontal datum line, for example, the tangent to the coast line at a seaside place.

No special difficulty appears to have been attached to the designing of suitable link mechanism for achieving these ends, and it is stated that the apparatus is not costly to produce. A specimen has been supplied to the hydrophysical station of the above-mentioned

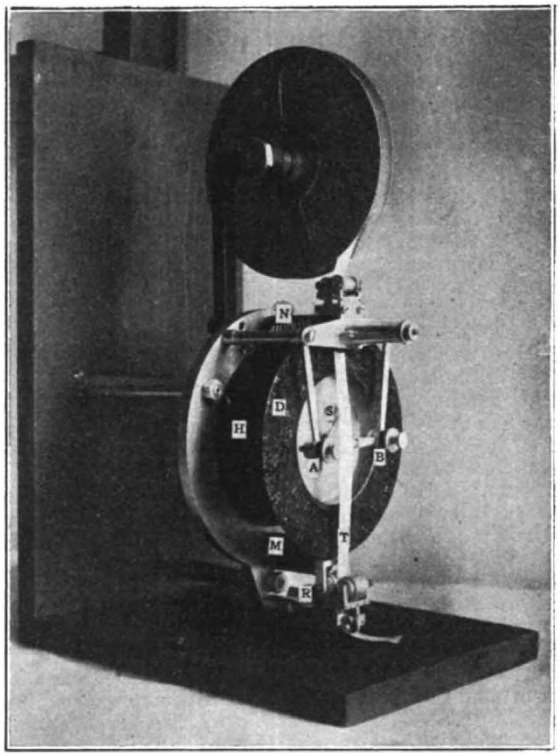

FIG. 1.

institute at Kaziveli (Crimea) for use in solving problems connected with the transference of heat and water vapour from the Black Sea to the adjacent land.

Another use suggested is for determination of the mean vector speed and direction of the wind at any place. In this case the axis of reference will be the east-west or south-north line.

The mechanism for achieving item (1) above is shown in Fig. 1. R is a ratchet wheel, and M an electromagnet. Every time that the cups of the anemometer complete one revolution, they complete an electrical circuit which brings this electromagnet into operation, and the latter turns the ratchet wheel

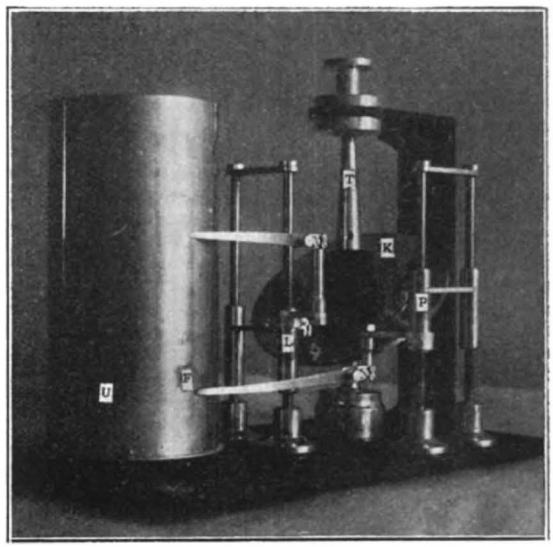

FIG. 2.

forwards by one tooth ; this causes a definite length of the tape T to be unrolled. D is a disc which bears twelve rubber zeros and twelve rubber dots on its face, equally spaced around the axis. The disc D is turned by the hour hand of a clock, so that every half-hour a zero or dot comes opposite to the tape. The minute hand S of the clock completes an electric circuit through screw A or screw B every time that this happens, and by this means another electromagnet is bought into action which draws forward the iron disc H and makes a zero or dot on the tape. In this way the run of wind for each half-hour can be measured on the tape.

The mechanism for achieving item (2) is shown in Fig. 2. T is the axis of a wind vane to which is rigidly attached an inclined disc K. The changes in the direction of the wind therefore cause K to revolve in a skew manner.

A roller attached to a sliding piece P conveys the simple harmonic movement in the vertical of the upper surface of the disc K near to P to a pen arm (F) linked with P, this movement being recorded on a chart attached to the drum U, which is turned by clockwork. In a similar manner, a second pen conveys the vertical movements of the disc at a point 90° from P through the agency of the sliding piece L. Now the difference in phase of 90° ensures that if the apparatus is so set that the displacements of F are proportional to the cosine between the direction indicated by the vane and the axis of reference (for example, the coast line), then the second pen will record the sine of that angle.

Atlantic and Pacific Land-Bridges.[1]

THE value of zoogeography as the pathfinder for geology is being more widely recognised. Dr. von Ihering summarises in this paper some of the conclusions from his life's study of the biological relations of South America to the history of the Atlantic and Pacific Oceans. He agrees in general with the conclusions put forward in 1929 by Prof. J. W. Gregory (see NATURE, April 20, 1929, p. 622) in the presidential address to the Geological Society on the " History of the Atlantic ". Dr. von Ihering considers that the North and the South Atlantic were separated until the Miocene period by land that extended from West