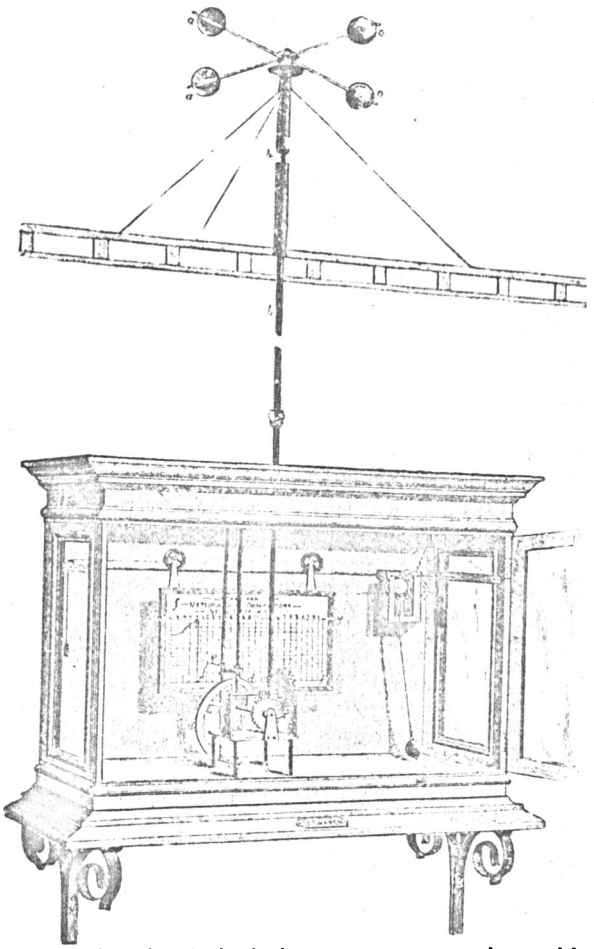
DR. D. DRAPER'S INSTRUMENT FOR RECORDING THE VELOCITY OF THE WIND.

On the ends of a cross supported by a vertical shaft several feet above the roof of the building, are four hemispherical copper cups. These, whatever may be the direction of the winds, are caused to turn round with a speed, as has been determined by experiment, of about one-third the velocity of the wind. This portion of the contrivance was the invention of Dr. Robinson, of Ireland. It is used in the foreign observatories, and is known as Robinson's cups.

To the lower end of the shaft thus made to revolve by the cups is attached an endless screw connecting with a train of wheels, which move a cam. The wheels are so arranged that one turn of the cam answers to 15 miles in the movement of the wind. A pencil which rests on the edge of the cam, and bears lightly against a surface, is carried from the bottom to the top of the paper by each revolution of the cam. It should be understood that the paper is attached to a board drawn aside by a clock at the rate of half an inch an hour. The number of times that the pencil moves from the bottom to the top of the paper, multiplied by 15, gives the number of miles that the wind has moved in an hour or day.



The four hemispherical cups, *a a a a*, turned round by the wind, impart their motion to a vertical shaft, *b b*, at the bottom of which is the endless screw, *c*, its lower end resting in a small agate cup filled with oil, connected with the train of wheelwork turning the cam, *d d*. At *e*, is the pencil resting on the edge of the cam; *f f* is a sheet of ruled paper attached to the board, *g g*, by means of small brass clamps, which is drawn aside at the above mentioned rate by the clock, *h*.

STATISTICS OF THE SUN.

The following *Statistics* of the Sun, comprising facts which can be stated in numbers, are selected from Professor C. A. Young's recent work "The Sun," being one of the last additions to Messrs. Appleton's International scientific series.

Solar Parallax (equatorial horizontal), 8.80" ± 0.02"

Mean distance of the sun from the earth, 92,885,000 miles, 149,480,000 kilometres.

Variation of the distance of the sun from the earth between January and June, 3,100,000 miles, 4,950,000 kilometres.

Linear value of 1" on the sun's surface, 450.3 miles; 724.7 kilometres.

Mean angular semi-diameter of the sun, 16' 02.0" ± 1.0".

Sun's linear diameter, 866,400 miles; 1,394,300 kilometres. (This may, perhaps, be variable to the extent of several hundred miles.)

Ratio of the sun's diameter to the earth's, 109.3.

Surface of the sun compared with the earth, 11,940.

Volume or cubic contents, of the sun compared with the earth, 1,305,000.

Mass, or quantity of matter, of the sun compared with the earth, 330,000 ± 3000.

Mean density of the sun compared with the earth, 0.253.

Mean density of the sun compared with water, 1.406.

Force of gravity on the sun's surface compared with that on the earth, 27.6.

Distance a body would fall in one second, 444.4 feet; 135.5 metres.

Inclination of the sun's axis to the ecliptic, 7° 15'

Longitude of its ascending node, 74.

Date when the sun is at node, June 4–5.

Mean time of the sun's rotation (Carrington), 25.38 days.

Time of rotation of the sun's equator, 25 days,

Time of rotation at latitude, 20, 25.75 days.

Time of rotation at latitude, 30, 26.5 days.

Time of rotation at latitude, 45, 27.5 days.

(These last four numbers are somewhat doubtful, the formulæ of various authorities giving results differing by several hours in some cases).

Linear velocity of the sun's rotation at his equator, 2.261 miles per second; 2.028 kilometres per second.

Total quantity of sunlight, 6,300,000,000,000,000,000,000,000,000,000 candles.

Intensity of the sunlight at the surface of the sun, 190,000 times that of a candle flame; 5300 times that of a metal in a Bessemer converter; 146 times that of a calcium light, 3.4 times that of an electric arc.

Brightness of a point on the sun's limb compared with that of a point near the centre of the disk, 25 per cent.

Heat received per minute from the sun upon a square metre, perpendicularly exposed to the solar radiation at the upper surface of the earth's atmosphere (the solar constant), 25 calories.

Heat-radiation at the surface of the sun, per square metre per minute, 1,117,000 calories.

Thickness of a shell of ice which would be melted from the surface of the sun per minute, 48½ feet; or 14¾ metres.

Mechanical equivalent of the solar radiation at the sun's surface, continuously acting, 109,000 horse-power per square metre; 10,000 (nearly) per square foot.

Effective temperature of the solar surface (according to Rosetti), about 10,000° Cent.; or 18,000° Fahr.

WE have to thank our English contemporary the London "*Lancet*" for its acknowledgement of the interesting nature of the articles published in "SCIENCE."

THE Governor of Texas has taken steps to form a permanent organization preparatory to the establishment of a State University.