Office during this period show that the conditions were mostly anti-cyclonic, both over this country and the Continent, with the exception of a depression in the south-west, which caused some sharp thunderstorms on the 9th and 10th. On the 18th another depression appeared off our north-west coasts, causing a gale in those parts, while strong winds and lightning occurred generally, with heavy rain in the west. These conditions checked the excessive heat; on the 19th the maximum temperature in London was 15°, and at Paris 25°, lower than on the previous day.

A SENSITIVE SPHEROMETER.

THE ordinary spherometer has three arms carrying three fixed points, with a point moved by a screw in the centre. This form is an improvement on the original spherometer invented by Andrew Ross, and for which the Society of Arts gave him a silver medal in 1841.

A description of Ross's instrument is given by Holtzapffel, vol. iii. p. 1271 of his work on "Turning and Mechanical Manipulation," extracted from vol. liii. of the Transactions of the Society of Arts. This instrument could measure to $\frac{1}{1000}$ of an inch, and by estimation half this amount. An ordinary spherometer, with a screw of $\frac{1}{100}$ of an inch pitch and head divided to hundredths, will measure to $\frac{1}{10000}$ of an inch.

I pointed out in vol. l. page 145, of the Memoirs of the Royal Astronomical Society that the sensitiveness of the ordinary spherometer was much increased by placing the screw not in the centre, but in one of the arms in place of one of the fixed points; this at once increased the sensitiveness of the screw in proportion to the distance of the screw from the nearest fixed point, and this fixed point from a line joining the other two fixed points.

The improvement I wish to bring before those interested in spherometers by this note, is the extension of this principle, for by carrying the middle point much nearer the line joining the other two, a proportionate increase of sensitiveness is obtained.

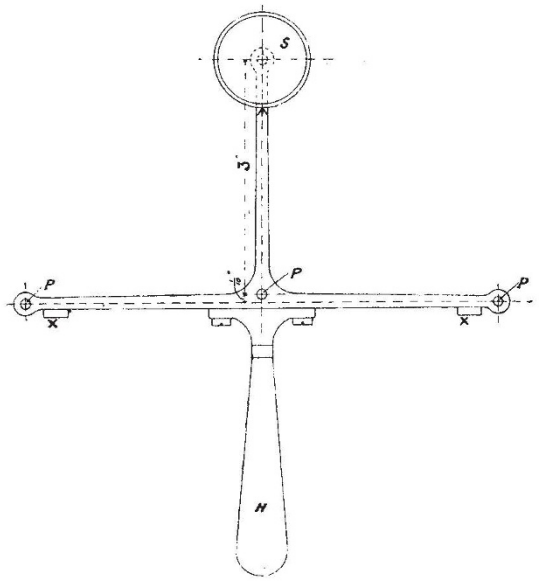
In the case of an instrument I have made on this plan I have increased the sensitiveness thirty times, the distance from the middle point to the screw being three inches, and the distance of the point from the line of the other two being $\frac{1}{10}$ of an inch; with a screw of one hundred threads to the inch and a head divided to hundredths, the ordinary form of instrument will read to $\frac{1}{10000}$, but on the plan I give, the same screw will measure $\frac{1}{300000}$ of an inch.

There is an additional advantage in this form, that the curvature of a part nearly in a line is measured, so that cross measures can be taken.

The form of the instrument is not symmetrical, and it requires to be balanced, so that when the screw is raised it will be possible to estimate the frictional contact of the outside points when the middle one is taking the weight. This balancing is easily done by adding a handle to the part opposite the arm carrying the screw; in practice it is found that this handle is of the greatest value in keeping the heat of the hand from the instrument, as even with the ordinary instrument, holding it for a short time in the hand alters the readings materially.

It is of great advantage to have on the arms carrying the two outer pins two pieces of wood or ivory projecting not quite as much as the measuring points, so that by tilting the instrument up these two pieces come first into contact with the surface to be measured, then by gradually raising the handle the points are brought gently into contact. The figure is a plan of this spherometer, and shows the position of the three fixed points P P P with reference to the measuring screw S, and the position of the balancing handle H with reference to the unsymmetrical arm carrying the measuring screw; X X are the projecting pieces already mentioned.

The movement of the screw being so large for a slight curvature, this instrument is more particularly useful for measuring the slight curvatures of so-called plane mirrors,



PLAN

for which, indeed, it was designed. To make it available for measuring differences between parts of a curved surface of considerable curvature the middle pin should be a screw capable of movement to, and clamping, in a position, that will allow the measuring screw to work.

A. A. COMMON.

JEAN DANIEL COLLADON.

DANIEL COLLADON, the celebrated physicist and engineer, died on June 30, at Cologny, near Geneva.

Colladon was born at Geneva, December 15, 1802. He belonged to a Protestant family from Berry, which removed from France, in the middle of the sixteenth century, on account of religious persecutions, and found refuge in Calvin's town. Many a distinguished magistrate came from this family, amongst others the learned juris-consult, Germain Colladon.

While still quite young Colladon proved to be wonderfully intelligent, and had a remarkably observant mind.

He went through the College and then the Academy of Geneva, which at that time had, among its professors, A. P. de Candolle, M. Aug. Pictet, Th.de Saussure and Prevost. His liking for science could not but develop itself in contact with these eminent men, whose esteem he soon gained.

At the age of ten years he made friends with Charles Sturm, who became a noted mathematician, and was on later occasions his fellow-worker. His inventive nature and talent for experimental inquiry turned itself above all to physics and its mechanical applications.

He was just twenty-two when he received from the Society of Science of Lille a first prize for the invention of a new photometer. At twenty-three he went to finish his studies at Paris. He lived there for about ten years, leading a simple life, almost entirely devoted to work.

He was received in a most flattering manner for such a young man by the pleiades of celebrated men, which the