surface by the fluorescence of the points of impact of electrons which have passed through the 'microscope' on to a screen. The whole arrangement is like a small optical bench set up in a vacuum vessel. Two examples of its application are given: the first, a 150-fold enlargement of a badly coated oxide cathode, showing clearly the patchy nature of the active surface, which could not have been inferred with such certainty from an ordinary optical study; and, secondly, a set of enlargements (× 65) showing the migration and final disappearance of the active centres on an overheated coated cathode. It would appear to be possible in principle, although scarcely in practice, to obtain pictures of the electron-emitting areas on the surface of the sun from experiments on the streams of charged particles which produce the aurora.

The Wassermann Test.—Many variations of the Wassermann test have been described, with the view of increasing its sensitiveness and rendering it more specific, thus eliminating the doubtful reactions, which are of no value to the clinician. E. J. Wyler has recently described an improvement in his routine test, by which more accurate results can be obtained (Reports on Public Health and Medical Subjects, No. 67. London: H.M. Stationery Office, 1932. 4*d*. net). In the test, the suspected serum, previously heated to 55° for 30 min. to inactivate complement, is mixed with complement (guinea-pig's serum) and antigen (alcoholic human heart extract, 3 parts, with 2 parts of a 1 per cent alcoholic solution of cholesterol) and incubated at room temperature for 30 min. and then at 37° for 30 min. A standardised suspension of sheep's red blood cells sensitised with at least six doses of hæmolytic immune body is then added; hæmolysis occurs quickly when the suspected serum does not come from a case of syphilis, but is absent or incomplete when the patient has suffered from syphilis which has not been completely cured—in other words, the Wassermann test is positive. In all tests, control tubes are put up containing serum and complement but no antigen: ysis of the sensitised red cells should be quick and complete, when added at the end of the preliminary incubation, in the presence of three minimal hæmolytic doses of complement. The variations in the method concern the amounts of complement, antigen, or serum added and the type of antigen used. The author has found that the greatest sensitiveness is attained when the amount of serum is increased from three up to five times that normally used, whilst variations in the quantities of the other reagents gave less satisfactory results. 20 per cent of sera which were negative or doubtful by the routine test gave a definite positive response with the new method. In non-syphilitic sera, there were no false positives and only 2·6 per cent were doubtful: with the ordinary test, 9·3 per cent were doubtful. The new method is also more sensitive than the flocculation or Sigma test, which itself is more sensitive than the routine Wassermann test.

Astronomical Topics

Two New Comets.—A telegram from the I.A.U. Bureau, Copenhagen, announces the discovery of a new comet by Mr. Newman, who gave the following position for 1932·0:

U.T.	R.A.	N. Decl.
June 20^d 4^h 49·4^m	15^h 37^m 16^s	7° 56′

Daily motion, − 2^m 8^s, +44′: Magnitude, 13·0

From observations on June 1, 7, and 20, Whipple and Cuningham have determined the following elements:

T = 1932 Sept. 27 U.T.
ω = 73° 50′
Ω = 244 50 } 1932·0
i = 76 50
q = 1·57

The following ephemeris is for 0^h U.T.:

	R.A. (1932·0).	Decl. (1932·0).
June 30	15^h 20^m	+14° 0′
July 4	13	16 10
8	15 8	18 10

The following observations have been made by Dr. W. H. Steavenson with his reflector at West Norwood. Equinox 1932·0:

		R.A.	Decl.
June 21^d	23^h 9·7^m	15^h 34^m 3·1^s	+ 9° 4′ 42·6″
22	23 9·5	15 32 10·2	+ 9 43 48·0
25	0 19·3	15 28 26·5	+10 51 16·9

The B.D. position of the comparison star, B.D. + 9° 3075, was used. The comet preceded it by 1·0^s, and was 7′ 19·1″ north of it. The diameter was 1′, and there was a nearly stellar nucleus of magnitude 12. The approximate daily motion indicated is about − 1^m 41^s, +38′. The comet is well placed for observation.

A Reuter's telegram from Wellington, New Zealand, announced the discovery of a comet of the 10th magnitude by the New Zealand Government Astronomer; the message was dated June 23, but the discovery was presumably on June 22 by U.T.

R.A. 9^h 15^m decreasing.
S. Decl. 84° 36′ decreasing.

This makes the seventh cometary discovery of the year, including the van Biesbroeck object of March 6, which was not seen again. Two of the seven (Grigg-Skjellerup and Kopff) were the returns of periodic comets; the others appear to be new comets.

The Coming Total Solar Eclipse.—An article by Dr. A. V. Douglas (*J. Roy. Ast. Soc. Canada*, May–June) gives information about the arrangement of parties to observe this eclipse, and suggests how amateurs can help. Observations of the exact limits of the path of totality are suggested; this was satisfactorily carried out in the eclipse of January 1925; also observations of the shadow-bands, of the fall of temperature, and of the degree of illumination during totality (by seeing at what distance small type can be read). It is also suggested that wireless experts may study the effect of the eclipse on radio-transmission. Dr. Douglas gives a list of coming totalities; but, curiously, as in several lists, the favourable eclipse in Norway on July 9, 1945, is omitted; this is a return of the British eclipse of 1927, but with a higher sun and longer totality. Prof. C. A. Chant, in the same journal, gives details of the location of the various parties of observers. Dr. J. Jackson and Mr. C. R. Davidson from Greenwich, with Dr. Knox Shaw, are going to Parent, north of the St. Lawrence; Prof. F. J. M. Stratton to Magog, on the south side of the River; Profs. A. Fowler and H. Dingle will observe from McGill University, near the edge of the belt of totality. A party from the Royal Astronomical Society will go to a station in Maine. Nearly all the great American observatories are sending parties, and others are going from Japan and Pulkovo. Given fine weather, it should be one of the best observed eclipses on record. A map of the portion of the track from the St. Lawrence to the Atlantic is given in the B.A.A. Handbook for 1932.