Our Astronomical Column.

CAPELLA.—A knowledge of the parallax of Capella is of special interest owing to the close resemblance of this star's spectrum to that of the sun and the fact that it is a spectroscopic binary with a period of 104$\frac{1}{4}$ days. Prof. F. Schlesinger and Mr. Z. Daniel have made a new determination at the Allegheny Observatory (*Astr. Journ.*, No. 765). They observed both the principal star and Furuhjelm's distant companion. The weighted mean parallax (absolute) is 0·068″ ± 0·006″. Earlier results are: Elkin, 0·079″; Jost, 0·051″; and Adams and Joy, 0·105″.

The star B.D.+61° 2068, the proper motion of which is 0·77″, was also measured for parallax at Allegheny, the large value 0·139″ ± 0·007″ (absolute) being found. The corresponding absolute magnitude is 9·3 visual and 10·5 photographic.

Attempts were made some twenty years ago to detect the duplicity of Capella telescopically. It was considered for a time that the 28-in. equatorial at Greenwich gave an elongated image, but, in view of the failure of the great American refractors, little reliance was placed on this. A letter from Prof. Hale dated January 6 last (*Observatory*, March) announces that success has been obtained by interferometer methods with the 100-in. reflector. It was deduced that the separation on December 30, 1919, was 0·042″, and the position angle 148° or 328°. It is hoped that a continued series of such observations will give a determination of the inclination of the orbit, and hence of the masses of the components. There is even a prospect that the diameters of such giant stars as Sirius, Antares, and Betelgeux may be determinable with the interferometer.

CAPE OBSERVATIONS OF THE SUN, MERCURY, AND VENUS.—The Cape observations of these bodies, made with the new transit circle and the travelling-wire micrometer during the five years 1907–11, have just been distributed, together with a discussion of results. The corrections to the equinox derived from the three bodies are in good accord, and indicate that Newcomb's system of right ascensions needs the constant correction −0·05s. The corrections to Newcomb's longitudes of perihelia of Mercury, Venus, and the earth are −0·78″, +6·8″, and −7·4″ respectively. These are of interest in relation to the Einstein controversy. Newcomb applied the corrections to the centennial motion of the perihelia given by the Asaph Hall hypothesis, according to which gravitation varies as $r^{-2\cdot0000001612}$. This formula gives +43·37″, +16·98″, and +10·45″ for Mercury, Venus, and the earth, whereas Einstein's formula gives +42·9″, +8·6″, and +3·8″. It will be seen that the adoption of Einstein's law of gravitation by the Nautical Almanac would mean a movement towards Newton's law, not a departure from it.

The following semi-diameters of Mercury and Venus at distance unity were deduced from the observations:—Mercury (latitude observations) 3·36″ ± 0·03″, (longitude) 3·79″ ± 0·17″; Venus (latitude) 8·67″ ± 0·03″, (longitude) 8·97″ ± 0·04″. The tabular values are 3·34″ and 8·40″. As these depend to a considerable extent on observations made during transits, they are likely to be somewhat too small.

The Cape results may be too large owing to irradiation, but, since all the observations were made in daylight, this is not likely to be excessive. But as the mass of Venus is only five-sixths that of the earth, it is probable that its diameter is also smaller, whereas the Cape figures make it equal to the earth.

Basic Slag and its Uses in Agriculture.

AN important discussion on basic slag and its uses in agriculture, organised by the Faraday Society, at which a number of leading representatives of the steel makers and of agriculturists were present, was held in the rooms of the Chemical Society on March 23. Prof. F. G. Donnan presided over the meeting.

The discussion was opened by Dr. E. J. Russell, who gave a general survey of the subject and indicated the nature of the problems concerned. The basic slag produced by the basic Bessemer process had earned a high reputation as a potent agent in the improvement of poor pastures. The effect is indirect, and results from a stimulation of the white clover—whether the action of the phosphate is on the clover plant or on the nodule organism is not yet certain. But whatever the reason, the effect on pasture land is very marked, and British agriculturists could absorb some 300,000 or 400,000 tons a year if this could be produced. Unfortunately for agriculturists, however, the Bessemer process is in danger of supersession, and the basic open-hearth process is taking its place. This new process gives two kinds of slag, both poorer than the Bessemer slag in phosphates.

One of these slags is made by the use of calcium fluoride, and in consequence is less soluble than the other. The great problem before the investigator at the present time is to enrich the low-grade slags so as to make them better worth grinding and transport than they now are.

Open-hearth slag made without fluorspar has hitherto proved practically as effective as the old Bessemer slag when compared on the basis of equal amounts of phosphorus. Fluorspar slag has proved to be of less value, although considerably better than was at first thought.

It is usually assumed, though by no means proved, that the phosphate is the only effective constituent in the slag. At various times it has been suggested that lime, manganese, or iron might be useful; it is also possible that slag contains a silico-phosphate which might have more value than the ordinary phosphate.

The enrichment of the slag cannot apparently be brought about by any change in the pig iron, owing to the great disparity in price between steel and slag; fractionation is, however, possible, or the addition of ground mineral phosphate to the molten slag. Further experiments would be necessary before any decision can be made.

Sir Thomas Middleton gave an account of the place of basic slag in the agricultural system of this country. British farmers tend more and more to produce animal rather than human food. The two main human food-crops—wheat and potatoes—occupied no more than 3,000,000 acres before the war, while 36,000,000 acres were devoted to the crop requirements of cattle and sheep. The value of the wheat and potatoes was about 27,000,000*l.*, while the live stock brought in some 125,000,000*l.* The supreme importance of basic slag arises from the fact that it helps to produce animal food; it is essentially a pasture fertiliser. In the Cockle Park experiments the untreated pasture yielded about 20 lb. of lean meat per acre per annum; after treatment with basic slag the yield rose to 105 lb. of meat per acre. The results of many other experiments show that on thousands of acres in this country the yield of meat might be increased by the use of basic slag. Nor are the advantages of slag confined to grass land. By ploughing up more grass, valuable additions could be made to the tillage land, and if the remaining grass were treated with basic slag there