OUR ASTRONOMICAL COLUMN.

THE SUPPOSED NEW COMET.—Ephemeris Circular No. 492 of the *Astronomische Nachrichten* contains a notice from Prof H. Kobold, Kiel, announcing that Prof. Frost has identified the supposed new comet discovered by Mr. J. E. Mellish on September 6 with N.G.C. 2261.

STAR COLOURS.—There are two methods by which the colours of stars are being determined:—(1) the direct method, in which a coarse objective grating is used, and estimates made of the mean effective wave-lengths of the light from the stars; and (2) comparison of the relative intensities of two separate regions of the stellar spectrum. As usually effected, this is an indirect method, based on measures of photographic and visual (or photovisual) magnitudes. Three recent contributions from Mount Wilson Observatory, (*Astrophysical Journal*, vol. xli., No. 1) deal with this subject. In one of these Prof. E. Hertzsprung presents an account of his researches on the stars in the cluster N.G.C. 1647 by the grating method used in conjunction with the 60-in. reflector of the Mount Wilson Observatory. Photometric magnitudes and effective wave-lengths are given for rather more than 200 stars in the cluster. In the case of 44 stars, a comparison of the measures of effective wave-length are compared with a rough classification of the spectrum. Partly from this paper, Mr. F. H. Seares derives data for a comparative study of colour-indices measured indirectly with those obtained by transforming effective wave-lengths. Results for 47 stars of magnitudes between 11·5 and 15 indicate that for this interval the two series of colour-indices show the same increase in mean colour with increasing magnitude. In the remaining paper, Prof. Hertzsprung discusses the mean effective wave-length of a number of absolutely faint stars. Effective wave-lengths show little change for stars of abs. mag. +3 and +8, the values lying between λλ 4500–4600. The suggestion is made that the abs. mag. +3, corresponding to a temperature of 3400° abs. for a black body the size of the sun, represents the stage of a cooling star at which relatively dark solid matter begins to form on its surface.

RAIES ULTIMES.—Comte A. de Gramont designates by this term those lines in the spectrum of an element which for any given source of luminescence persist longest as the percentage of the element is reduced. They are thus lines of maximum sensitivity. In a paper lately published (*Ann. Chem.*, vol. iii., May–June, 1915) it is pointed out that the effect of reduction of quantity of substance should not be confounded with diminished exposure in photographing the spectrum. The one operates on the spectrum, the other acts merely on the record. The persistent lines are not identical in the two cases. It appears that in general the vestigial spectrum is not of necessity made up of remnants of the strongest lines of the elements, though, in fact, the *raies ultimes* mostly seem to be either the strongest or among the strongest lines, and they are usually lines which readily reverse. They bear some sort of relationship to the "long" lines employed by Sir Norman Lockyer some forty years ago as criteria to establish the presence of less spectroscopically conspicuous elements in the sun. The paper contains interesting suggestions regarding the energy distribution in line spectra and on the relationship between the *raies ultimes* and the point of maximum radiation.

EARLY NAUTICAL ASTRONOMY.—An address on the beginnings of geographical science, delivered by Sir Clements R. Markham before the Royal Geographical Society on June 10 last (*Geographical Journal*, vol. xlvi., No. 3, September, 1915), contains much extremely interesting information regarding the development of astronomical methods, instruments and tables, employed in navigation during the period of revival of nautical adventure; the period of the first Transatlantic voyage, and the rounding of the Cape of Good Hope. It was, in fact, the efforts of the Portuguese to open up the western coast of Africa, leading seamen into southern waters out of sight of the familiar Polaris, that necessitated the formulation of new methods. A mathematical Junta appointed by King João II. of Portugal (1481–95) triumphed over the difficulties. It now appears that a Jewish royal physician was the leading spirit of the commission, and it was a friend of his, Abraham Zacuto, professor of astronomy at Salamanca, who had ready at hand the requisite tables giving the sun's declination. Lack of space forbids further description here. The lecturer drew largely on the researches of Senhor Joaquim Bensaude, in particular on the latter's work "L'Astronomie nautique au Portugal à l'époque des grandes découvertes," Bern, 1912.

APPROXIMATE DETERMINATION OF PLANETARY LONGITUDE.—In *Knowledge* (August) Prof. Herbert Chatley gives a simplified method of calculating planetary longitudes for elliptic orbits without employing intricate mathematics. The method depends on the assumption, apparently very nearly true, that the difference between uniform circular motion and elliptic is harmonic. It is claimed that the method is capable of giving results to within a few minutes of arc.

THE CANADIAN ARCTIC EXPEDITION.

MR. VILJALMUR STEFANSSON, the Canadian Arctic explorer, whose unexpected safety is announced, contributes his personal narrative of the expedition to Monday's *Daily Chronicle*. He left Alaska in July, 1913, for the Beaufort Sea. Bases were also to be established on Prince Albert Sound and Patrick Island. Mr. Stefansson was accompanied by Dr. Forbes Mackay and Mr. James Murray, of Shackleton's first Antarctic expedition; M. Henri Beuchat, a French anthropologist, who was to study the Eskimo of Bank Land; Mr. W. L. McKinlay and others. Captain Bartlett, of Peary's North Pole expedition, was in charge of the *Karluk*, the main ship of the expedition. Whether or not the *Karluk* could reach Patrick Island and penetrate the Beaufort Sea depended on the prevailing winds. With a persistence of easterlies, which Stefansson hoped for, this would be possible, but otherwise he realised that his plans must be modified.

Early in August, 1913, the *Karluk* was beset in the ice in 147° W., fifteen miles off the shore. In the belief that the ship was firmly frozen in, Stefansson, with three companions, went ashore to hunt towards the end of September. During their absence a strong north-easterly gale broke up the ice and carried the ship away to the west. Passing near the coast firmly beset in the ice the *Karluk* was carried north-westward to 73° N. 162° W. on November 11. Her drift then changed to south-west, and by the end of the year she was sixty miles north-east of Herald Island. Two weeks later the ship was crushed and sank, but not before a quantity of stores had been placed on the ice. Herald Island could not be approached on account of open water, so tracks were made successfully for Wrangell Island. A party of eight, however, including Dr. Mackay, Mr. Murray, and M. Beuchat, who had left the *Karluk* earlier in an attempt to reach

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