the low temperature assay of coal. The list will repay perusal of those interested in such work.

WE have received from Mr. W. H. Robinson, 4 Nelson Street, Newcastle-on-Tyne, a copy of his recently issued Catalogue No. 10 containing upwards of 1000 entries, many relating to books dealing with archæology, folk-lore, the occult, botany, natural history, etc. We notice that this bookseller has for sale a copy of the first edition of Newton's "Principia."

A USEFUL catalogue (No. 111) of new and second-hand books (upwards of 4000 in number) on botanical subjects has just been issued by Messrs. Dulau and Co., Ltd., 34 Margaret Street, London, W.1. It is classified as follows: Cryptogams and Plant Pathology; Agriculture and Economic Botany; Floras, Monographs, Systematic Works, Landscape Gardening, Herbals, Pre-Linnean Botany, and Serial Publications.

MESSRS. WHELDON AND WESLEY, LTD., 2 Arthur Street, W.C.2, have just issued a very useful catalogue (New Series, No. 12) of selected second-hand works on natural history, including most of the great faunas, floras, and monographs, with coloured plates. It is classified under the following headings, and is worthy of perusal: *Zoology*—General works, Voyages, and Travels; Aves; Insecta and Arachnida; Invertebrata; Mammalia; Pisces and Reptilia; and Sport, including Falconry. *Botany*—The general subject; and Horticulture and Agriculture.

Our Astronomical Column.

MINOR PLANETS.—The Stroobant object, mentioned in our issue of March 15, is a minor planet, not a comet. It may be a known planet, as the ephemerides for these do not extend so far from opposition. The planet (9) Metis was in the neighbourhood, but apparently not quite near enough to the place to make identity possible.

Another interesting planet has been found by Herr Reinmuth, of Königstuhl Observatory, Heidelberg: it is of magnitude 13·6, and is moving north at the unusual rate of 25′ daily, so that it is probably fairly near the earth.

THE MASSES AND LUMINOSITIES OF THE STARS.—An important paper on this subject was read by Prof. A. S. Eddington at the meeting of the Royal Astronomical Society on March 14. He provisionally assumed that absolute magnitude could be expressed as a function of the mass plus a constant; also that absorption in the star's interior varies as density/(temperature)^2. A curve was drawn in which Capella, the mass of which is accurately known, was taken as the standard star. The masses of the highly luminous stars were taken from Prof. Shapley's results for the Cepheids and Prof. Plaskett's recently published results for Algol-variables in which both spectra can be photographed. The other end of the curve was filled in from the masses of the binary stars of large parallax. Prof. Eddington noted that he had not expected that the results from dwarf stars would fit on the curve derived from giant stars, but to his surprise they did so. He concludes that the principle, enunciated when the giant-and-dwarf theory was started, that the dwarf stars do not obey the laws of a perfect gas, is unsound; that, in fact, these laws are obeyed even for densities much greater than that of the sun. He thought that this fact might be explained by the atoms in the interior of the stars being ionised and stripped of their outer electrons. Their bulk is thereby greatly reduced, and there is room for them to move freely, even when the density is considerable. The interior of the dwarf stars continues to get hotter and hotter, but the surface cools by radiation.

Prof. Eddington suggested that the small mass of the dwarfs might be due, as he had indicated some years ago, to the annihilation of matter within the star, colliding atoms destroying each other and liberating the large amount of energy locked up in them. The mass of a star would thus be less in its old age.

The results of the paper would necessitate considerable alteration in the manner of stating the giant-and-dwarf theory. Prof. Eddington did not anticipate opposition from the authors of that theory (Profs. Russell and Hertzsprung), as he gathered from recent communications that they were reaching conclusions similar to his own.

THE HUNDRED NEAREST STARS.—Prof. Eddington many years ago collected statistics on the stars (some 22 in number) that lie within 5 parsecs of our system. Mr. Willem J. Luyten has extended the distance to 10 parsecs, and prepared a monograph (Harvard Annals, vol. 35, No. 5) collecting and discussing all known data of the stars within this region. His list contains 104 stars, which is not much more than half the number to be expected; but many of the undetected stars are likely to be very faint. His table goes further than Eddington's in that he gives estimated masses of the stars based on the statistics of masses of different spectral types and absolute magnitudes. Arcturus and Vega are each given parallax 0·134″ and mass 3·50. The smallest masses are taken as 0·20. The great majority of the stars are dwarfs; the graph connecting spectral class with absolute magnitude approximates to a straight line, falling from 0·5 mag. for Ao to 11·5 mag. for Mb.

The sun's apex relatively to these stars is given as R.A. 278°, Decl. +36°, velocity 25 km./sec. The latter is higher than the value given from the whole star-system, probably because the dwarfs, which predominate in the local stars, are quick movers. There is a very distinct preference for motions in the plane of the Galaxy; very few apices are more than 30° from it. The high velocities appear in the region between galactic longitudes 340° and 100°, but strong reasons are given against the suggestion that these quick-moving stars are interlopers not belonging to our system.

Various points are discussed in the paper, such as the light thrown on Kapteyn's figure of the stellar universe from this sample of its nearer portion. An investigation is made of the number of stellar collisions per annum in the whole system. The result comes out $1{\cdot}4 \times 10^{-13}$, or, say, 1 in 6 billion years. This does not apparently take account of the mutual gravitation of the stars, which would have a considerable effect when they approached fairly near each other.