breaking down the more complex molecules into simpler ones by means of heat. This operation, which in its modern forms the lecturer dates back to a patent issued in 1890 to the late Sir Boverton Redwood and Sir James Dewar, is considered to be the most promising way of increasing supplies of petrol from petroleum sources.

AMONG points of interest in the report (Cmd. 881) of the Government Chemist on the work of his department during the past financial year we note that radium was extracted from many thousands of luminous dials, compass-cards, gun-sights, and similar materials made for use during the war. The extraction was complicated by the overwhelming proportion of paint with which the radium was mixed, but practically all was recovered and converted into a form suitable for further use at a comparatively small cost. For the Board of Trade 532 samples of the potash material supplied by Germany to this country were analysed. The samples taken were divided into three portions; one was analysed in Germany, another here, and the third retained in a neutral country for reference in case of dispute. The report, however, does not indicate whether any dispute actually arose. Incidentally, in connection with other samples, a method was worked out for differentiating between sodium chloride and potassium chloride in solid caustic potash. A good deal of work was done on the determination of the nature and proportion of the possible toxic constituents which might be present in water receiving drainage from tarred roads. In the course of this work new and delicate methods for detecting some of the substances were devised. Carbolic acid, for instance, can now be detected and estimated when present in even smaller proportion than one part in a million parts of water. The total number of samples, 368,898, dealt with during the year showed an increase of nearly 80,000 compared with the previous year. The principal increases were due to imported goods, such as wine, sugar, tea, and cocoa; they are indicative of the revival of trade after the return to peace conditions.

WE have just received the Lincolnshire Naturalists' Union Transactions for 1919. The first portion of the volume is devoted to the annual reports of the sectional officers, recording, in most cases, the work which has been done during the past year in their own departments. The report from the botany section is somewhat different; it consists of notes selected from observations on seed-dispersal which have been made during the past fifty years by the sectional president and his colleagues. The methods adopted by birds for the transportation of seeds over long distances are mentioned, and the remainder of the report is given over to a list of the agents and methods by which the seeds of the commoner trees are dispersed. A complete list of the author's observations, which he promises to publish in a future volume, "The Flora of Lincolnshire," will be welcomed by ecologists. The volume also includes lists of marine shells of the Lincolnshire coast by Mr. A. Smith, and of non-marine mollusca of the county, contributed by Mr. J. W. Musham from data obtained from the manuscripts of the late Mr. W. J. Roebuck.

Our Astronomical Column.

ANOTHER QUICKLY MOVING DWARF STAR.—Mr. Innes's zeal in examining pairs of plates with the blink micrometer has been rewarded by the discovery of another very interesting dwarf star with a large proper motion and parallax. The former was detected from plates taken at Sydney, the latter from a series of fourteen plates taken at Johannesburg with the Franklin-Adams lens. The star is of the 12th magnitude; its position for 1920 is R.A. 11h. 12m. 52·39s., S. decl. 57° 8′ 13·1″; the proper motion in R.A. is −2·506″, in decl. +0·973″, total 2·688″ in P.A. 291·2°. The parallax from R.A. measures was found to be 0·350″, that from declination measures 0·324″.

The proper motion of α Centauri is 3·68″ in P.A. 281·4°. That of the present star is sufficiently near this to suggest that it may belong to the same system. Mr. Innes notes that if this were the case its parallax would be about 0·5″. It is not stated whether he took the radial velocity of α Centauri into account; in any case, the observed parallax is sufficiently near to render the assumption of connection tenable.

PROF. BARNARD'S OBSERVATIONS OF NOVA PERSEI.—Prof. Barnard puts the Yerkes refractor to good use in continuing to observe novæ long after they have become too faint for ordinary observers. The Monthly Notices, R.A.S., for June contains his observations of Nova Persei, 1901. Its light is still subject to fluctuations; thus it rose from 13·7 to 12·6 between 1919 November 15 and 18, declining again to 13·7 in the three following days. The mean value in 1920 is 13·48, and the progressive decline appears to have ceased. Unlike some other novæ, its aspect does not now differ from that of an ordinary star, and Prof. Barnard considers that it has returned very closely to its condition before the outburst. Micrometer measures of position appear to show a slight proper motion of the nova relatively to faint adjacent stars, the centennial displacement being 1·08″ in the direction of diminishing R.A. and 2·20″ S.

It is noted that the period required to decline to the pre-nova condition varies in different stars between eight and fifteen years, which is surprisingly short, considering the tremendous character of the outburst.

THE BERGEDORF OBSERVATORY, HAMBURG.—Vol. ii, Nos. 3–5, of the Abhandlungen of this observatory, which has just been issued, contains a useful catalogue of the positions, magnitudes, and colour-indices of the stars in the Pleiades (584 in number) down to mag. 14. The magnitudes were determined by observations with two wedge-photometers. Comparison with Hertzsprung's photographic catalogue shows that the visual magnitudes of the fainter stars are brighter in the mean by 0·7. The colour-indices increase rapidly from mags. 3 to 10, remaining fairly constant after this. Comparison is also made between the number of stars in each half-magnitude interval and the number to be expected in an average region of the same area in galactic latitude 23·7°, using the table of Van Rhijn. For stars brighter than mag. 11 the excess is more than threefold; it then gradually declines, reaching zero at mag. 13½. Another essay discusses the planetary observations made from 1909 to 1920. An interesting round dark spot on Jupiter had the abnormally large rotation period of 9h. 58·13m. from 1920, February 17 to March 18; it then split into two portions, one retaining the same rotation period, while the other had the value 9h. 53·5m., from observations between March 27 and April 1. There is also a study of the contour lines of equal luminosity in the Milky Way (north of decl. −25°). The brightest regions are between γ and β Cygni and in Sagittarius.