

**Low Temperature Carbonisation of Coal.** In accordance with the policy adopted by the Government some years ago, the Department of Scientific and Industrial Research has examined the Turner plant for the low temperature carbonisation of coal installed at the Comac Oil Co. Ltd., Coalburn, Lanarkshire. The report on the test issued by the Department (H.M. Stationery Office, 9d. net) shows that the retort is of the continuous vertical type, internally heated by superheated steam. A peculiarity is the use of a fluctuating pressure claimed to facilitate transfer of heat from the steam to the coke. From 1 ton of coal were obtained 13.4 cwt. of coke, found to be a good domestic fuel, 21.3 gallons of tar and spirit, 2,170 cub. ft. of gas of total heating value 18.7 therms, and 334 gallons of liquor of no value, although as an effluent it must be regarded as a distinct liability. The alternations of pressure are regarded as a necessary feature of this process, but tests made with the plant adjusted to give steady and fluctuating steam pressures to the retort gave substantially the same results.

**Dewaxing and Acid Refining Mineral Oils.** At a Congress of Polish Petroleum Technologists two years ago, the De Laval *S-N* method of dewaxing was for the first time made public. The data then were based principally on tests with Polish oils from Schodnica and Uryez. Tests were being carried out on a small plant, but since that time a larger centri-

fugal separator has been employed successfully, and it has been possible to treat pipe-still distillates in addition to those produced by other methods. An account of this process was given by Dr. Nils Olof Backlund on December 13 at the Institution of Petroleum Technologists. Among interesting points made was the substitution of trichlorethylene as a more suitable solvent for separating the wax from the oil than the time-honoured benzene. Rate and degree of cooling of the oil-solvent mixture are of the utmost importance to the process. The advantages of the De Laval *S-N* trichlorethylene method compared with the benzene method include a smaller quantity of solvent used, a shorter period of cooling and the possibility of working at higher temperatures. Particulars were also given regarding acid treatment of petroleum products, and it was concluded that this process had not reached an entirely satisfactory stage. Fundamentally, acid treatment still remains a 'discontinuous process', and suffers from the disadvantages thereof when compared with efficiency of distillation, dewaxing and cracking in continuous plants. The author pointed out directions in which modernisation of acid-refining is desirable and gave an account of the De Laval *S-N* acid sludge separator, which represents a definite advance on anything so far designed. The main importance of this process, however, would seem to be in the field of lubricating oil refining, where it is destined to effect considerable economy in production costs.

**Astronomical Topics**

**Astronomical Notes for January.** Mercury can be observed as a morning star early in the month; Venus is also a morning star, but far from the earth, and approaching superior conjunction; its disc is almost fully illuminated. Mars is approaching opposition, and is visible for most of the night; this is an aphelion opposition; the diameter on March 3 will be just under 14". Jupiter also reaches opposition in March, and will be near Mars for some months. Saturn is in conjunction with the sun in January; Uranus is still observable in the evening. Neptune is well placed for observation in the middle of Leo.

A star of mag. 5.6 is occulted by the moon on Jan. 9, disappearing at 8.28 P.M.  $\kappa$  Geminorum (mag. 3.6) disappears at 10.50 P.M. on Jan. 11, reappearing at 11.24, angle 221°; the moon is full on that day.

The following are the positions of Comet Dodwell-Forbes at the beginning of Jan. 14 and 24, according to the Whipple-Cunningham orbit:

Jan. 14 R.A. 0<sup>h</sup>38<sup>m</sup>34<sup>s</sup> S.Decl. 4° 52'; Jan. 24 R.A. 1<sup>h</sup>15<sup>m</sup>4<sup>s</sup> N.Decl. 4° 43'.

Comets Faye and Geddes may also be seen with moderate telescopes; there are ephemerides in the B.A.A. Handbook for 1933.

There are minima of Algol at convenient times for observation on Jan. 8 at 7.54 P.M. and on Jan. 28 at 9.42 P.M.; a full table is given in B.A.A. Handbook.

**Mass of Eros.** Soon after the announcement by W. H. van den Bos and W. S. Finsen that Eros appeared like a figure-of-eight in the 26½ in. Johannesburg refractor in January 1931, Prof. W. H. Pickering derived the mass of Eros on certain assumptions as to its figure. Dr. Knut Lundmark has made a further investigation based on the same material (*Lund. Obs. Circ.*, No. 7). The diameter of Eros was

taken as 23.4 km., and it was supposed to consist of two spheres in contact, each having a radius of 5.85 km.; the reciprocal of the mass in terms of the earth is 259,900,000. This gives a density only a quarter of that of the earth. If the distance of centres is increased to 18.6 km., the density becomes equal to that of the earth.

**Comets of A.D. 868 and 1366.** It was established by Dr. Hind that the second of these comets is in all probability identical with Tempel's Comet, 1866 I, associated with the Leonid meteors; Hind thought that the comet of 868 might also be identical with it. The *Japanese Astronomical Herald* for October, 1932, contains a re-investigation of the orbits of these two comets, by Dr. S. Kanda, based on the original observations; for the first comet he used observations made in Japan, Europe, and Korea; for the second he does not appear to have found any further observations than those used by Dr. Hind, and the new orbit is quite close to that of Hind.

<i>T</i>	868 March 4	1366 Oct. 18.54 U.T.
$\omega$	277°	164.8°
$\Omega$	305	218.5
<i>i</i>	65	149.8
<i>q</i>	0.42	0.9749
<i>e</i>	1.00	0.9059
Period	—	33.35 years (assumed)
Equinox	868.0	1366.0

It may be concluded that the first comet is not identical with Tempel, but that the second probably is identical. This identity had been assumed by the Computing Section of the British Astronomical Association in investigating the perturbations of the comet from 1366 until 1932. Search ephemerides are given in the B.A.A. Handbooks for 1932 and 1933.