

one of $\frac{1}{20}$ in. The average period from infection to manifestation of the disease is approximately 7 months in the case of natural infection and $4\frac{1}{2}$ months with artificial infection. From manifestation of the disease until death of the tree, the average period is about 15 months but varies with the girth of the tree. The transmission of the disease to healthy trees by grafting can be carried out most easily by a semi-trained staff, by leaf-grafting. Successful transmission by means of any particular insect has not so far been carried out, but suspicious spike-like symptoms have appeared in seven cases. Grafting, however, failed to transmit these same symptoms to healthy plants. While the vector is as yet unknown, the available evidence points to its being an uncommon species of insect of the order Hemiptera.

Science Masters' Association

IT is satisfactory to learn from the report of the Science Masters' Association for 1940 that the membership remains almost stationary and that the schools represented, now more than 950, show a slight increase. It is suggested that meetings of the eight branches of the Association, which were discontinued last year, should be started again in spite of difficulties, and that the Examinations' Sub-Committee might receive more criticisms from members. This work is most useful, and every effort should be made to keep it up.

Motor-Vehicle Industry in Great Britain

ACCORDING to an article in *Engineering* of January 31, new registrations of private cars in Great Britain in the first seven months of 1940 totalled only 30,200, compared with 194,500 in 1939. Since July 1940, new registrations have been taken out at the rate of only 200–300 a month. New registrations of commercial vehicles up to July were about one quarter of the corresponding figures for 1939; after July, however, there was a fall from an average of about 1,400 a month to about 300 a month as the result of the ban on sales except by special permit. Exports of private cars from the United Kingdom in 1931 numbered 17,104; in 1937 the figure was 53,655; and in 1939 it was 35,190 during January–August and only 8,040 during September–December. These figures show that the rate of export of complete cars and chassis was approximately halved as the result of the outbreak of war. A comparison of British exports and new registrations during the early months of 1940 suggests that the production of private cars was probably at the rate of 6,000 a month. This compares with about 30,000 a month during the early months of 1939 and a peak production of more than 32,000 a month in 1937. The production of private cars for the home market had thus become only a subsidiary function of the industry, the main functions of which were the provision of trucks and lorries for the Army and assistance to the aircraft industry.

On the retail side, the reduction in the sales of new vehicles has resulted in an appreciable fall in turn-

over of most of the firms in the industry, though this fall has probably been very much less than was anticipated at first. During the winter of 1939–40, about half a million motor-cars were laid up—approximately a quarter of the total number in use. Many of these were put back on the road in the spring. For the quarter ended June 30, 1940, receipts from motor-vehicle taxes were £850,000 higher than for the corresponding quarter of 1939. This must be considered very satisfactory, especially in view of the increased rate of tax. Motor-cycles were excluded from the ban on sales of motor-vehicles imposed in July. Up to August 1940, home sales were at the rate of about 3,000 a month, compared with rather more than 5,000 in the preceding year. A significant feature of the sales during 1940 was the high proportion of the total accounted for by motor-cycles of less than 150 c.c. capacity. These have consistently accounted for between 70 and 80 per cent of the total sales, whereas for 1939, the corresponding proportion was only about 25 per cent. It is to be hoped that the impetus given by petrol rationing to the development of the small machine in Great Britain will encourage British exporters to meet foreign competition at the end of the War.

Diesel-Engine Driven Generating Station

A NEW electric-generating station has been installed at Port Macquarie, which is a seaside town at the mouth of the Hastings River, New South Wales. The power is supplied by three Diesel engines furnished by Messrs. Blackstone and Co., Ltd., Stamford, Lincs, directly coupled to alternators having a combined output of 500 kilowatts. Two of the engines are 240 b.h.p., six-cylinder units, and the third is a 120 b.h.p. three-cylinder engine. The engines are of the latest totally enclosed design, and as the plant has to run unattended for part of the day, an alarm signal has been installed, which is claimed to give complete protection against accidents, such as an excessive rise in the lubricating oil temperature, failure of the cooling-water flow, over-speed or overloading, failure of the oil pressure or excessive temperature of the cooling water. If the alarm is not attended to within five minutes, the engine automatically stops and no damage is done. The engine room measures 70 ft. by 31 ft., and a special fuel room is provided, the fuel entering the engine room through a trench, which also accommodates the air, lubricating oil, and cooling-water pipes.

Comets

Comet Friend-Reese. *Harvard Card 560* announces that Mr. Clarence L. Friend, Escondido, California, discovered a comet on January 17. It was discovered independently by Mr. E. J. Reese, Uniontown, Pennsylvania, and was described as diffuse with a nucleus, tail less than 1° in length, magnitude 10. Messrs. K. Guthe and R. M. Thomas of the Harvard Observatory have determined a position of the comet from a pre-discovery image on a Harvard plate taken with the *F*A camera (Cambridge, 1.5 in. aperture),

and from a plate taken with the *I* camera (Cambridge, 8-in. aperture). The first was on Jan. 0.9908 and the other on Jan. 29.00698, and from these and an observation on January 19 they have computed the following orbit :

| | | |
|----------|-----------------------|----------|
| <i>T</i> | 1941 Jan. 20.633 U.T. | |
| ω | 132° 35.9' | } 1941.0 |
| Ω | 329 2.9 | |
| <i>i</i> | 26 36.5 | |
| <i>q</i> | 0.94285 | |

Comet Encke. *Harvard Card* 561 announces that Van Biesbroeck, Yerkes Observatory, reports the discovery of this comet on Jan. 19.033. It is described as diffuse with a nucleus, the magnitude being 17. In the "Handbook of the British Astronomical Association, 1941", the late Dr. A. C. D. Crommelin gave the elements and an ephemeris, and the comet is very close to the predicted position.

Comet Paraskevopoulos (1941 *c*). This comet was discovered by Dr. John S. Paraskevopoulos, of the Boyden Station, Bloemfontein, on January 23, and also by Dr. R. Grandon and others. Its magnitude was stated to be 3.5 and its tail was 5° in length. An orbit computed by Wood and Jackson, and cabled by Dr. John Jackson, Cape of Good Hope, is given below, and also an ephemeris :

| | | |
|----------|-----------------------|----------|
| <i>T</i> | 1941 Jan. 27.779 U.T. | |
| ω | 268° 26' | } 1941.0 |
| Ω | 41 50 | |
| <i>i</i> | 168 08 | |
| <i>q</i> | 0.7894 | |

| 1941 | R.A. | Dec. | <i>g</i> | <i>r</i> |
|----------|--------|--------|----------|----------|
| March 27 | 2h 08m | +11.3° | 2.124 | 1.327 |
| 31 | 2 10 | 11.8 | | |
| April 4 | 2 11 | 12.3 | 2.323 | 1.435 |
| 8 | 2 13 | 12.7 | | |
| 12 | 2 14 | 13.1 | 2.497 | 1.544 |

Comet Okabayasi - Honda (1940 *e*). This comet was discovered at Tokyo on October 4 and was described as being of magnitude 11 and possessing a nucleus. The elements of an orbit and also an ephemeris, computed by Miss E. L. Scott and Mr. H. A. Panofsky, of the University of California, are given below :

| | | |
|----------|------------------------|----------|
| <i>T</i> | 1940 Aug. 15.8440 U.T. | |
| ω | 329° 50' 16" | } 1940.0 |
| Ω | 127 15 15 | |
| <i>i</i> | 133 07 30 | |
| <i>q</i> | 1.06372 | |
| <i>e</i> | 1.00345 | |

| 1941 | R.A. | Dec. | <i>g</i> | <i>r</i> |
|----------|----------|---------|----------|----------|
| March 27 | 1h 10.6m | 48° 52' | 3.903 | 3.314 |
| April 4 | 1 17.3 | 49 03 | | |
| 12 | 1 23.8 | 49 22 | 4.185 | 3.490 |
| 20 | 1 30.2 | 49 49 | | |
| 28 | 1 36.0 | 50 22 | 4.410 | 3.663 |

The Night Sky in April

THE moon is full on April 11 at 21h. and new on April 26 at 13h. U.T. A naked-eye star, α Leonis (mag. 3.8) is occulted on April 7, the disappearance, as seen from Greenwich, taking place at 21h. 43.5m. at position angle 58° from the north point of the moon's image. Jupiter and its companion, Saturn,

are planets of the evening sky. Both will soon be too close to the sun for observation, but they will re-emerge as morning stars towards the end of June. Mars continues as a morning star, and is 5° above the eastern horizon about 3h. 30m. U.T. in mid-April. The distant planet, Neptune, is not far from β Virginis and comes to the southern meridian shortly after 22h. U.T. in mid-April (add 1 h. to convert to Summer Time). This planet, seen as a star of magnitude 8, requires for its detection some telescopic aid and a section of a star map for guidance such as is given in the "Handbook of the British Astronomical Association, 1941", p. 9. In the same constellation is one of the best-known binary stars, γ Virginis. The components are of nearly equal magnitude (3.6 and 3.7 respectively) and their present separation is 5 $\frac{1}{2}$ " ; the period is about 180 years. The Lyrid meteors are most frequent about April 20, their radiant point being near 104 Herculis, that is, south-preceding the bright star, Vega.

Announcements

DR. F. C. HAPFOLD, lecturer in biochemistry in the University of Leeds, has been elected to the recently instituted readership in biochemistry.

THE Herbert Jackson Prize of the London, Midland and Scottish Railway for 1940 has been awarded to Mr. S. C. Britton, of the Metallurgical Department (Engineering Section), Derby, for his paper entitled "The Corrosion of Copper and some Copper Alloys in Atmospheres highly polluted with Coal Smoke".

THE Chemical Society will attain its centenary on March 30, and will hold the hundredth annual general meeting at Burlington House on Thursday, April 3. The business portion of the meeting will be at 12 noon when the election of Prof. J. C. Philip as president, and of those fellows nominated to fill vacancies among elected ordinary members of Council will be announced. At 2.45 Sir Robert Robinson, the retiring president, will deliver his presidential address entitled "The Mechanism of the Benzidine Rearrangement and some Related Topics". Arrangements for the celebration of the centenary of the Society have been postponed until after the War.

AT the annual general meeting of the Royal Astronomical Society held on March 14, the following officers were elected for the ensuing year: *President*, Prof. S. Chapman; *Vice-Presidents*, Prof. David Brunt, Sir James Jeans, the Rev. T. E. R. Phillips, Prof. H. C. Plummer; *Treasurer*, Mr. J. H. Reynolds; *Secretaries*, Mr. D. H. Sadler, Dr. A. D. Thackeray; *Foreign Secretary*, Sir Arthur Eddington.

THE publication "Rubber and its many Uses", by H. McKay, in "The Empire at Work" series (Oxford University Press, 1940) deals, in 76 pages, and in very simple language with the production of rubber in the plantation and the way in which it is manufactured into various articles such as sponges, tubes, tyres, tennis and golf balls, and hard rubber. The whole is well illustrated. The price is 10d.