

Fish oil and bitumen do not act as deterrents. They soften hard wood and seem to be attractive to *Martesia*.

Silt, sewage and a heavy incrustation with barnacles all tend to prevent the entrance of molluscan borers.

Spharoma are always numerous and there seems to be not a way of protecting wooden piling except by sheathing them in copper or concrete.

SUMMARY.

Wood block traps were immersed at three stations in and near Cochin Harbour. They showed that the waters contain active larvæ of *Martesia* and *Teredo* from April to October. Owing to the low salinity growth of *Teredo* is very slow.

There are strains of *Martesia* and *Balanus* which can grow in almost fresh water.

According to pallet morphology four species of *Teredo* were found. Their attacks are limited to the region near the harbour mouth where the water is salt, and at levels at and near low water line.

Bankia setacea adults 19" and 21" long were found in wooden piles in the harbour, but no young appeared in the traps.

Sphæroma are always abundant and very destructive to piling.

Records of growth found in the traps for bi-monthly periods between April and November 1935 are given, also suggestions for the protection of wooden craft.

Centenaries in April 1936.

Grover (John William), 1836-1892.

JOHN WILLIAM GROVER, born on 20th April 1836, was an engineer with wide practice in several countries. He had his education first at Marlborough College and later in Germany. He was apprenticed under Sir Charles Fox and Sir John Fowler. His field of interest shifted from time to time. In the earlier years, he was engaged in Museum architecture and was associated with the building of the north and south courts of the South Kensington Museum and the erection of the conservatory of the Royal Horticultural Society. He also took a prominent part in the erection of buildings for the Exhibition of 1862. He was also associated with the erection of the Royal Albert Hall.

AS A RAILWAY ENGINEER.

In his 26th year, he set up independent practice as a Railway Engineer. His first work was the construction of 27 miles of the Manchester and Milford Railway. He surveyed various railways in Europe and prepared designs for the works of the Mexican Railway. The Kingland iron bridge, of 200 feet span over the Severn built by him, is said to present some novel features of construction. In 1873, he constructed the Mountain Railway of Venezuela. While at Venezuela he made a hydrographical survey of the coast of that country and thus prepared the way for the construction of the harbour of La Guaira.

AS A WATER-WORKS ENGINEER.

From his 37th year, he turned his attention to water-supply. He designed and constructed the water works of several towns in the Chalk districts. He was an authority on the water-supply of London. He was also employed in the survey of water-supply in Austria, Denmark, Egypt, Italy and Switzerland.

He was elected a member of the Institute of Civil Engineers in 1867 and was also a Fellow of the Society of Antiquaries and a Vice-President of the British Archaeological Association.

Mr. Grover died at his residence in Clapham Common, on 23rd August, 1892.

HIS PATENTS AND PAPERS.

Of the patents taken out by Grover, the most widely known is the one for the "spring washer", used to prevent the slacking of permanent way fish bolts. These washers are being used in all parts of the world.

His chief papers are the following:—

1. "Estimates and Diagrams of Railway Bridges," 1866. 2nd edition in 1870.
2. "The Facilities of 'flexible' Rolling-Stock for economically constructing... Railways or Tramways," 1870.
3. "Description of a Wrought-iron Pier," 1871.
4. "Iron and Timber Railway Superstructures," 1874.
5. "Suez Canals from

the most ancient times to the present," 1877. 6. "Section of a well at Hampstead," 1878. 7. "Ancient Reclamations in the English Fenlands," 1878. 8. "Chalk water-springs in the London Basin," 1887. 9. "Proposed Richmond Footbridge," 1890. 10. "An explanation of the London Water Question," 1892.

S. R. RANGANATHAN.

Tschermak (J. L. Gustav), 1836-1927.

THIS veteran mineralogist of Czechoslovakia was born on 19th April 1836. His father was a tax collector. As a school boy, he was marked by his independence and enterprise and he was the founder of a natural history society. In 1856, he went to the University of Vienna and later to Tübingen, where he graduated in 1860. He was the Director of the Hofmineralien Kabinet in Vienna from 1868 to 1877. From 1868 to 1906 he was Professor of Mineralogy and Petrography in the University of Vienna. Professor E. S. Dana of America was one of his distinguished students in 1873-74.

HIS WRITINGS.

Tschermak was a prolific writer. He has to his credit no less than 153 papers, of which only 5 were joint papers. His first paper appeared as early as 1858, in his 22nd year, in *Wien. Geol. Verhandl.* It was entitled *Trachytgebirge bei Banow*. His last paper was *Der Chemische Bestand und das Verhalten der Zeolithe*. It appeared in 1918, in his 82nd year, in the *Sitzb. Akad. Wiss., Wien*. His *Grundriss der Mineralogie* came out in 1863, while the first edition of his well known *Lehrbuch der Mineralogie* appeared in parts during 1881-1884. This book reached its ninth edition in 1923.

HIS CHIEF CONTRIBUTIONS.

While his earlier papers were of a petrographical nature, he will be remembered longest for his classic memoirs on the chemical constitution of various groups of silicate minerals. These include *Felspars* (1865), *Amphiboles* (1871), *Micas* (1877), *Zoisite-epidotes* (1880), *Scapolites* (1881), *Chlorites* (1890), *Vermiculites* (1891), *Tourmaline* (1899), and *Zeolites* (1918).

FOUND A PERIODICAL.

He is also well known through the important periodical he founded which, as *Mineralogische Mitteilungen*, was first issued from 1872 to 1877, in quarto form as a supplement to the *Jahrbuch der K. K. geologischen Reichsanstalt, Wien*. It took an octavo form in 1878 and continued to appear in that form till 1889, under the title *Mineralogische und Petrographische Mitteilungen*. In 1889, the editorship went over to F. Becke, who changed its title to *Tschermak's Mineralogische und Petrographische Mitteilungen*. Yet another change came over this periodical in 1930 when it was taken over by the Akademische Verlagsgesellschaft in Leipzig and was made Abteilung B of the *Zeitschrift für Kristallographie Mineralogie und Petrographie*.

HONOURS.

He was elected Foreign Correspondent of the Geological Society of London in 1875. He was made a Foreign Member in 1886. He was elected an Honorary Member of the Mineralogical Society of London in 1879. In 1875, he was made a Full Member of the Kais. Akademie der Wissenschaften in Wien. He was Rector of the University of Wien in 1893. He was one of the founders and the first President of the Wiener Mineralogische Gesellschaft (1901). He was also Honorary Member of the Academies at Berlin, Göttingen, Munich, Paris, Rome, Leningrad and Sweden. He was raised to peerage in 1906 with the hereditary title Edler von Seysenigg. In 1873, F. von Kobell perpetuated his name by naming a mineral as 'tschermakite.'

PERSONALITY.

Professor Dana describes him as a charming courtly gentleman. He was most kind and helpful to the younger aspirants. His popularity among all those that came into personal contact with him is demonstrated by an extraordinary gesture of regard which he experienced since 1920. The War left him in straitened circumstances. But his life was made comfortable by substantial monthly remittances from the American mineralogists who were his admirers. Although he lived to 91 years, he retained his clearness of mind almost to the day of his death—May 4, 1927.

S. R. RANGANATHAN.