on sticks to light the way. Rival companies raced to a fire, and it was a sporting event which of them should be first there. Many incentives were offered to the companies, who sometimes did what they could to slow up their rivals. Cast iron plates were fixed to houses insured by those insurance companies paying bounties to fire-fighters who saved insured property. The fire-fighters were in great demand for parades and political rallies, and no celebration was complete without them. Next came the days of steam fire-engines pulled by horses, and then the motor fire-engine.

The Blue Water of Crater Lake

IN the Cascade Mountains, Oregon, is the remarkable Crater Lake. It is about six miles long by four miles wide and lies within a volcanic crater the cliffs of which are 500–2,000 ft. high. Its depth in places is nearly 2,000 ft. It has no visible outlet, yet its water is fresh and is said never to freeze, although the surface is about 6,000 ft. above sea-level. It was discovered by white men in 1853, and was called the Deep Blue Lake. Seen from the rim of the crater, the water shades from turquoise blue along the shallow borders to darkest prussian blue in the deeper parts. From a boat, the colour deepens to dark indigo. Cloud shadows and wind flurries produce great variety in the appearance of the surface, but the main sensation produced in the eye of the observer is one of "unbelievable blueness". Dr. Edison Pettit, working on behalf of the National Academy of Sciences and the National Park Services, has recently completed a study of the reason for this extraordinary depth of blue (*News Service Bulletin* (School Edition); Carnegie Institution of Washington, **4**, No. 4). He finds that the water has no special colour of its own, but that it is exceptionally free from suspended matter; such scattering of light as occurs in its depths is mainly from the water molecules, and is therefore deep blue. The degree of clarity is almost that of specially prepared dust-free water. The scattered light from dust-free water is blue at all angles; that from Crater Lake water is white only for a comparatively narrow forward angle, and at all other angles is blue.

Wooden Pipe Lines

THE use of wooden pipes as a means of conveying water dates back almost to prehistoric times. They were much used in the Middle Ages. During recent years, traces of the water supply system of London (*c.* 1600) by means of hollow trunks of trees have often been found during excavations. In *World Power* of May, there is a paper by T. Pausert, telling how wooden pipes made of staves and bound with hoops are coming into modern practice all over the world. Generally, the staves are made of pine or larch wood, and are planed off to give a smooth finish after assembly. The contact surfaces are dove-tailed. When the pipe is filled with water, the wood swells and becomes water-tight. These wooden pipes are either placed on the ground or laid in the open on supports. Their diameters vary from 5 cm. to 6 metres. A great advantage is the immunity of the wood from the effects of water whether it is pure, acid, alkaline, saline or contains selinite. For this reason, wooden pipes are much used in the chemical industry. An important point is that salts are not deposited on the walls of the pipes, so that the latter do not become choked and their rate of flow affected. There is no risk of electrolysis from stray electric currents. If an increased pressure becomes necessary, it is easy to reinforce them by the addition of new steel hoops. If a sudden hydraulic surge occurs, the inherent elasticity acts as a safety valve; the staves being bound by hoops enable the longitudinal joints to let water escape in small jets. When the pressure comes back to normal, the staves resume their original position, and become water-tight again. Their cheapness, durability and the ease with which they can be transported in mountainous regions enable the power engineer to arrive at solutions to many of his problems by their use.

Safety on the Roads

THE National Safety Congress was held in London on May 20–22. An account of the congress is given in *Roads and Road Construction* of June 1. At the Congress dinner, Sir Herbert Blain pointed out how much the British have learnt from the Americans in connexion with improving our roads and making them safer. In particular, he mentioned the practice of coloured traffic lights and of one-way streets. Although there is a magnificent system of roadways in Great Britain, there are no roads that can compare with some of the roads now being laid in America. These national highways are very wide and have a beautiful surface, good elevation and proper lighting. The curves are properly rounded, and there is no ribbon development. Mr. A. Matheson, the assistant secretary to the Minister of Transport, read a paper on "Danger Spots". Experiments have been carried out in London, where certain roads with black records have been selected. A study of these records showed that a large fraction of the accidents occurred to pedal cyclists and pedestrians. These roads were then inspected and improvements suggested which it is hoped will diminish the number of accidents. In two of the roads where the work recommended has been completed, a record was kept for six months.

In the Chiswick High Road, the number of accidents as compared with the corresponding six months of the preceding year was reduced by 37 per cent, and in the Fulham Palace Road to Putney Bridge the reduction has been from 88 to 48, or nearly 45 per cent. The Oxford County Council, becoming alarmed at the large number of accidents on its roads, made a detailed investigation of them over two years ending July 1934. The investigation showed that nearly one half of the fatal accidents occurred on certain main roads constituting less than six per cent of the total mileage of the county. During the first seventeen weeks after making certain improvements, it was found that, compared with