Science News a Century Ago

Holland's Oxy-Hydrogen Microscope

The *Times* on November 20, 1834, announced that "Mr. Holland's very entertaining and very scientific exhibition is reopened this day for the season. We were present at a private view last night of the wonders which it presents to the eye. It has undergone many improvements since it was before open to the public, and may, we believe, now be considered what its proprietor states it to be, the largest, most powerful and most distinct microscope in the world. The disc contains 254 square feet and the objects, both animate and inanimate, are variously magnified from a power of 9,000 to a power of 2,624,400 times their actual dimensions. . . . Among the most curious phenomena presented to the eye are the aquatic larvæ, in some of which, so pellucid is the whole internal structure, that the intestinal canal and the peristaltic motion are clearly perceptible. . . ."

Darwin in the Island of Chiloe

During the whole of October 1834, Darwin was confined to his bed at the home of his old schoolfellow and friend, Mr. Richard Corfield, of Valparaiso; but at the beginning of November he was able to rejoin the *Beagle*. On November 10, he records, the *Beagle* sailed from Valparaiso to the south, for the purpose of surveying the southern part of Chile, the Island of Chiloe, and the broken land called the Chonos Archipelago, as far south as the Peninsula of Tres Montes. On November 21, the ship anchored in the bay of San Carlos, the capital of Chiloe, and a day or two later Darwin hired horses to take him to Chacao at the northern extremity of the island. On November 26, he records: "The day rose splendidly clear. The volcano of Osorno was spouting out volumes of smoke. This most beautiful mountain, formed like a perfect cone, and white with snow, stands out in front of the Cordillera. Another great volcano, with a saddle-shaped summit, also emitted from its immense crater little jets of steam. Subsequently we saw the lofty-peaked Corcovado—well deserving the name of 'et famoso Corcovado'. Thus we beheld, from one point of view, three great active volcanos, each about seven thousand feet high. In addition to this, far to the south, there were other lofty cones covered with snow, which, although not known to be active, must be in their origin volcanic".

Thomas Hawkins's *Ichthyosaurus*

The geologist Thomas Hawkins, 1810–89, was best known for his collections of fossils from Devon, Somerset and Dorset, some of which were acquired by the British Museum while others were presented by him to Oxford and Cambridge. His "Memoirs of Ichthyosauri and Plesiosauri" was published in 1834, and in the *Times* of November 21 of that year a correspondent directed attention to the delay of the authorities of the British Museum in placing on exhibition that extraordinary fossil animal "The Ichthyosaurus Chiroligostinos" of Mr. Hawkins, or "the Viery Dragon that stinged Moses" of the Dorsetshire quarrymen. "I was informed by one of the servants in the Museum," says the writer, "that cases were ordered for Mr. Hawkins's collection and that possibly the Ichthyos might be exposed in February. Fully acknowledging the propriety of its being placed in an additional case, I must protest against the absurdity of its remaining concealed till then. It is not liable to suffer from dust, or a slight touch, and to prevent persons meddling with it, for a few shillings a slight bar might be placed in front of it. . . . There seems to be a strange want of proper management, or something worse than that, on the part of some person or persons connected with the Museum, but whether it rests with Mr. Koenig or a higher authority I cannot say." Charles Dietrich Eberhard König (1774–1851) was the keeper of the Mineralogical Department.

Societies and Academies

LONDON

Royal Society, November 8. A. C. G. EGERTON and F. LL. SMITH: Estimation of the combustion productions from the cylinder of the petrol engine (1). An engine was fitted with a valve so that gases could be extracted at any stage during the compression and working stroke. By analysis of the gas it was confirmed that 'knock' is associated with accelerated flame velocity, but only in the last portion of the gas to burn. Some combustion occurs in the neighbourhood of the valve prior to arrival of flame. The aldehydes reach their maximum concentration (1 in 500) at the moment when flame reaches the valve, the substances behaving as peroxide (1 in 10,000) slightly earlier. Aldehydes were not responsible for the production of 'peroxide' or the 'knock'. Certain organic peroxides were found to be powerful 'pro-knocks'. A. C. G. EGERTON, F. LL. SMITH and A. R. UBBELOHDE: Estimation of the combustion products from the cylinder of the petrol engine (2). The experiments were extended to the study of the behaviour of different hydrocarbons and other kinds of fuel, the 'aldehyde'—a 'peroxide'—formed at various stages being determined by special methods. The substance behaving as peroxide is mainly nitrogen peroxide and the peak in the curve of concentration which occurred before the top dead centre is partly explained by the presence of traces of sulphur. Nitrogen peroxide alone does not act as a pro-knock, whereas organic nitrites are strong pro-knocks. Nitrogen peroxide is, however, formed in greater amounts under knocking conditions and quite early in the stroke. A. R. UBBELOHDE and A. C. G. EGERTON: Estimation of the combustion products from the cylinder of the petrol engine (3). The behaviour of various types of organic peroxides towards various reagents was investigated. By taking advantage of the different rate of reaction of the various peroxides on potassium iodide, it was possible to determine them in presence of nitrogen peroxide. Diethyl and ethyl hydrogen peroxide and acetyl peroxide were found to be violent pro-knock substances. The mol fraction needed to produce pronounced knock was 10^{-5}. A peroxide of apparently similar type to ethyl hydrogen peroxide was detected in the gases from the engine cylinder when run under knocking conditions on pure paraffin hydrocarbons in much the same concentration. H. JONES: Application of the Bloch theory to the study of alloys and of the properties of bismuth. A qualitative explanation is given of the variations of the crystal parameters within the ε and η phases observed by Owen and Pickup, and also of the electron-atom ratio at which the ε phase begins (Hume-Rothery's rule). A Brillouin zone is found for bismuth containing five electrons per atom. The theory shows why bismuth