Ludwig Mond, Professor S. P. Thompson, Professor Hellmann, and Mr. Fletcher Moulton, M.P.

Professor Dewar began with some remarks about the nature of hydrogen, pointing out that many of the most advanced chemical thinkers had regarded it as being metallic in character, and that to Professor Odling belonged the credit, so far as he knew, of being the first to suggest the contrary, now recognized to be the fact. Proceeding to show a long series of experiments, he explained how it was a consequence of the physical properties of liquid hydrogen that not much could be done with it unless it was available in reasonable quantities. After proving that its temperature was some 70 degrees below that of liquid air, and explaining how reduction of temperature became disproportionately more difficult the lower the starting-point on the scale, he illustrated the difference in the behavior of liquid nitrogen and liquid oxygen when made to boil under diminished pressure. The temperature of both was reduced, but, while the nitrogen became viscid and ultimately solid, the oxygen absolutely refused to solidify. In fact, it was impossible to get solid oxygen in this way, the reason being that at the lowest temperatures it had an inappreciable pressure of vapor, whereas that of nitrogen was considerable. To give an idea of the power of liquid hydrogen as a cooling agent he performed an experiment depending on the same principle as Wollaston's cryophorus, with the difference that the fluid to be solidified was not water but liquid air containing a large proportion of nitrogen, while the material used to effect condensation was liquid hydrogen. He next showed how hydrogen could be liquefied in a closed tube, explaining the importance of this fact with regard to the determination of its density and other questions, and then exhibited the gas in the solid form. This result was effected by putting a portion of the liquid into a vacuum vessel isolated from heat as perfectly as possible. When the pressure in the vessel was slowly reduced, the hydrogen was suddenly seen to appear like a white mass of solidified foam, possessing the lowest steady temperature it was possible to obtain at present—viz, 258° below zero Centigrade, or 15° on the absolute scale. The fact that hydrogen did solidify in this way was in a sense a disappointment to any one who was anxious to reach very low temperatures, for a solid was a bad substance for cooling purposes. Coming to the uses of liquid hydrogen for scientific research, Professor Dewar first showed how it afforded the only means of obtaining solid oxygen. Another important application was to the separation of the more volatile gases of a mixture. The behavior of metals with regard to electrical conductivity at very low temperatures was a very interesting question. From experiments with liquid air it was expected that at the zero of absolute temperature pure metals would have no electrical resistance at all. But although the resistance curves appeared to be going straight to zero at the temperature of liquid air, he found that lower down, below the temperature of solid air, they bent sharply round, so that a finite resistance was indicated. In conclusion, Professor Dewar acknowledged the kindness of those who had contributed to the cost of these investigations, and paid a tribute to the skill and devotion of his assistants. Such researches were necessarily costly, but he could not share the view of those who suggested that the results would not be worth the cost.

X-RAYS AND PHOTOGRAPHIC PLATES.

A DISCOVERY of very great practical interest in X-ray work has been made by Professor Nipher at Washington University. He has discovered that when photographic plates are exposed to the light of an ordinary room for a few days, that they may still be used for taking X-ray pictures. If while the Crookes tube is acting on the plates they are still exposed to the ordinary light of a room, they develop as positives. The shadows are dark. If they are in a plate holder when exposed to the X-ray, the pictures are like those formed in the ordinary way, and they are apparently as clearly defined.

The advantage of the method is that the plates may be developed by the light of a lamp. The developer (hydrokinone) being weak and cool, the process may go on for an hour if desired, and all the details may be studied as

they appear. In this way, details which are sometimes obscured by over-development may be seen as they appear, although they might not show in the fixed negative.

The development of such plates in darkness is liable to fog the plates. If plates do fog, they may be cleared up by taking them nearer to the lamp.

The results will be published in a forthcoming number of the *Transactions* of the Academy of Science of St. Louis.

SCIENTIFIC NOTES AND NEWS.

THE usual spring meeting of the Council of the American Association for the Advancement of Science, was held at Washington on April 19th, with President Gilbert in the chair. Dr. Howard, the permanent secretary, read his report. The local secretary for the New York meeting reported that all the arrangements for the meeting were made, and that everything promised an unusually large and successful meeting. The number of important special societies meeting with the Association would be much larger than ever before. The sessions will be held at Columbia University except the address of President Gilbert, which will be given at the American Museum of Natural History. The Hotel Majestic, Central Park and 72d St., will be the headquarters of the Association.

PRESIDENT SETH LOW, of Columbia University, was elected president of the American Geographical Society, New York City, on April 17th, succeeding the late Charles P. Daly.

M. A. LANCASTER, director of the Meteorological Service of Belgium, has been elected a foreign member of the Royal Meteorological Society, of London.

MR. WM. G. FREEMAN, B.Sc., has accepted the position of technical assistant to the Imperial Department of Agriculture for the West Indies.

CAMBRIDGE UNIVERSITY will confer the degree of doctor of science on Mr. Charles Hose, of Saráwak, known for his contributions to the natural history of Borneo.

PROFESSOR FREDERICK STARR has returned from a three month's trip to Mexico.

THE Duke of Loubat has returned to New York from a trip in Mexico, where he visited the ruins of Mitla to view the explorations by Mr. Marshall H. Saville, of the American Museum of Natural History.

MR. ANDREW CARNEGIE has promised the trustees of the Carnegie Institute, Pittsburg, Pa., to become responsible for $3,000,000, the amount estimated as necessary for the proposed extension and enlargement of the building at the entrance of Schenley Park. The new building will be nearly six times as large as the present one. It will be 500 x 700 feet in size. The space now occupied by the museum will be transferred to the library, while the museum will be transferred to the new building.

M. ALPHONSE MILNE-EDWARDS, the distinguished French naturalist and director of the Museum of Natural History, died on April 21st, in his sixty-fifth year.

PROFESSOR WM. M. THRASHER, for forty years professor of mathematics at the Northwestern Christian University and Butler College, has died at Berkeley, Cal.

A CORRESPONDENT of the London *Times* writes: Captain Peter Astte Scott, R.N., who died on March 31st, at the age of 84, had had a long and varied career. He joined the Navy in 1829, served in the Antarctic expedition of 1839 under Sir James Ross, and only missed serving as lieutenant to his old friend Sir John Franklin in his last fatal Arctic expedition owing to his arrival in England too late. He had already served five years under that officer in Tasmania as naval architect and surveyor. From 1846 to 1866 (when he retired) he was employed on the marine survey of the Canadian Atlantic coast. From 1869 to 1889 he served in the marine department of Canada, the protection of the fisheries, as examiner for masters' and mates' certificates, and as general nautical adviser, and was well known to all who served on the North American station for his geniality and hospitality.

THE London *Times*, also, states that Mr. William Cross, the well-known naturalist and dealer in wild animals, has died at Liver-