these rooms, which are, in effect, calorimeters, the appliances to be tested are installed. The rooms are made of $\frac{1}{2}$ -in. plywood, birch or gaboony, covered on the inside and outside with copper sheets 2 ft. by 1 ft. 6 in. Plywood has been chosen because of its low heat capacity, consistent with suitable thermal conductivity and mechanical strength. Each copper sheet is electrically insulated from its neighbour. Differential thermocouples are embedded at the mid-points of the copper sheets directly opposite each other on the inside and outside of the plywood, so that the difference between the internal and external temperature of the walls can be recorded. By suitable wiring the temperature difference can be measured through any individual panel, or the average through a group of panels such as a complete wall, floor or ceiling, and the heat-flow calculated. In practice, the calorimeter rooms are calibrated by a series of measurements when known amounts of heat are supplied from an electric heater operated at constant voltage.

An appliance to be investigated is mounted on a grating floor in the room, and the flue outlet connected through an opening in the ceiling to the chimney. The rooms are designed to be air-tight; but the pressures inside and outside are automatically balanced by control of the flow of the inlet air, so that risk of leakage is reduced to a minimum. Air enters the room by a duct and its flow is measured by an orifice plate and is automatically recorded. The arrangement is novel as the appliance can be operated under natural draught conditions, while by use of the balanced pressure system the air flow can be accurately recorded. In addition, an auxiliary fan with a flow meter is mounted above the cabinet and can be used to extract ventilating air if required. The temperatures of the air entering and the products of combustion leaving the room are recorded, and, where required, measurements of the water heated by the appliance. Radiation from the appliance is measured in the room by thermopiles arranged on a travelling arc covering the hemisphere in which the appliance is placed centrally.

Constant-temperature conditions on the outside of the testing cabinets are obtained by controlled air circulation, and a refrigeration plant is also provided to give cool air, when atmospheric temperatures are high or when appliances with a high output of heat are being examined.

The flues taking the products of combustion from the room are lined with stainless steel to enable the soot deposited to be removed without contamination for weighing and analysis. The flues terminate below the roof of the building, and constant conditions are maintained at the exit by a cowl and an injector fan. The smoke content of the gases is measured by projecting a beam of light across the flue on to a photo-electric cell. Two separate light paths are used, one directly across the flue for dense smoke, and the other with an oblique path for the lighter smokes. Electrical supplies to the light projectors and the photo-cell amplifiers are specially stabilized so that the record is unaffected by variation of mains voltage or frequency. The double windows through which the beams of light pass are electrically heated to avoid deposition from the products of combustion. The photo-cell equipment is calibrated by direct determination of the concentration of smoke in the chimney gases.

The control room for the four testing rooms is on the first floor and is 52 ft. long by 10 ft. wide; it is connected by air locks to each of the four rooms. All

instrument readings are automatically recorded in the control room, each calorimeter room having its separate panel. The instruments include six-line recording potentiometers and controllers for the constant temperature chamber. Air-flow recorders are mounted underneath the inlet ducts in the control room. Equipment is also provided for the accurate control and measurement of the water supply for measuring the boiler output of appliances.

Laboratory and office accommodation, and fuel storage, are arranged in the building, which forms a complete unit.

The construction and design comprise many novel features, and the calorimeter building should provide more detailed and accurate information of the heat output of domestic appliances and thus point the way to improvements in methods of heating.

OBITUARIES

Prof. Jacques de Lapparent

PROF. JACQUES DE LAPARENT, the eminent French lithologist, *Correspondant* of the Paris Academy of Sciences, died on May 18 at the age of sixty-five.

Jacques de Lapparent was educated in Paris. The enthusiastic interest which he displayed for minerals during his youth grew with time. The man thoroughly realized the vocation of the boy and, moreover, became a true scientific creator, a scholar backed by an artist.

As a university professor, J. de Lapparent was appointed to Lille in 1913, to Strasbourg in 1919, to Paris (Sorbonne) at the beginning of 1947. Since 1942, he also gave a regular course of geology and mineralogy at the *École Centrale des Arts et Manufactures* of Paris. His lectures were none the less in the classical style, and his original views and style brought together a select group of advanced students, chiefly in his later years.

Though he was a keen mineralogist and geologist, de Lapparent devoted the greatest part of his career to petrography and lithology. As a naturalist he gathered a great deal of information by travelling through many countries: Great Britain, Finland, Yugoslavia, Greece, French North Africa, French West Africa, and, of course, throughout France.

J. de Lapparent published about a hundred and twenty studies, including his authoritative and inimitable "*Leçons de Petrographie*", which established his world-wide reputation. Part of his reputation was due to some thirty published studies concerning bauxites and clays. He endeavoured to clear up the mineralogical composition and conditions of deposit of these rocks and earths. He was the first to show that three types of bauxite exist, each of them characteristic of geological phenomena at the age of formation: gibbsite bauxites formed above water-level, boehmite bauxites at water-level, and diasporite bauxites below water-level. Studying clays in a similar broad manner, he showed at the outset that fuller's earths are either kaolinite-halloysite earths, or attapulgite earths, or montmorillonite earths. These two last constituents, both aluminous and magnesian, are of different architectural types. Prof. de Lapparent endeavoured to elaborate an unequivocal classification with the aid of X-ray studies, which specify 7 Å., 10 Å., 14 Å. as the structural spacings for phyllites. At the same time, with his usual well-balanced scientific sense of research,

he explained the geological origin of some montmorillonite clays.

Indeed, Prof. de Lapparent was able to combine the keenest observation of the naturalist, either in the field or in the laboratory, by eye or with the aid of a microscope, with the ability to call upon modern physico-chemical techniques, to contribute to lithological problems. In this respect, it must be emphasized that, though he considered himself a naturalist, he was fully conversant with many physico-chemical methods, procedures and tests, X-ray crystallography being among the most helpful. He was able to grasp very easily the structural work coming from Sir Lawrence Bragg and his school and from Prof. L. Pauling. His aptitude for understanding in quite a short time the geometrical and physical aspects of atomic structures was really amazing. His efforts to introduce into petrography the results of structural X-ray crystallography, made with a pioneer's confidence, began to receive full appreciation in recent years.

J. de Lapparent wrote with a modern style—rather unusual, at least in French scientific papers—which sometimes gave a wrong impression to the reader more accustomed to a bald style supposed to be more fitted to scientific truth. The epigraph intro-

ducing one of his books was the famous quotation: "To everyone his own truth"; one of his works bears for title: "Defense de l'attapulgitite".

Actually, J. de Lapparent strived to report with a vivid style changes in the earth's crust, because he was himself a living representation of these phenomena. Further, the reader cannot but be impressed by the longing for truth which inspires J. de Lapparent's works and to appreciate the essential synthesis which appears in them in various guises. Up to the end of his life, Jacques de Lapparent maintained his high standards and his enthusiasm. His loyalty to friends, his charming attitude to all his acquaintances without reference to their position, made him a most attractive personality.

R. J. HOCART

WE regret to announce the following deaths:

Mr. T. R. D. Bell, C.I.E., chief conservator of forests, Bombay Presidency, during 1909–20, on June 24, aged eighty-five.

Mr. Harry Brearley, Bessemer medallist of the Iron and Steel Institute in 1920, known for his work on stainless steel, on July 14, aged seventy-seven.

NEWS and VIEWS

Zoology at Belfast: Prof. T. T. Flynn, M.B.E.

PROF. T. T. FLYNN is to retire at the end of the present session from the chair of zoology at the Queen's University, Belfast, which he has held since 1931. Born in Australia in 1883 and trained at Sydney under W. A. Haswell and J. P. Hill, he developed a natural interest in the anatomy and embryology and reproductive phenomena in marsupials. He maintained this interest throughout his university career, making valuable additions to knowledge in this subject. So recently as 1941, in collaboration with J. P. Hill, fundamental agreement in the mode of formation of the primary germ layers in monotremes and marsupials was demonstrated, while in 1947 strong support was given for the view of a similar mode of formation in birds and an incentive predicated for the re-examination of germ-layer formation in reptiles in the light of the work portrayed. Along with his interest in marsupials and their nearer allies, Flynn contributed work on the Pycnogonida of South Africa, describing ten new species; on corals of the Barrier Reef; on the invertebrate fauna of Tasmania; on rare and fossil Cetacea; and he demonstrated his interest in marine biology as leader of the Australian Antarctic Summer Expedition 1912, and as sole Royal Commissioner for the Tasmanian Fisheries in 1915. In his retirement to Jamaica he hopes to utilize this latter experience in taking a serious interest in the marine biology and fisheries of the Caribbean area, as well as in meeting the demands of the British Museum for local biological material.

On graduating at the University of Sydney, Prof. Flynn was awarded the University Medal and John Coutts Research Scholarship; and later he received the University Medal for his D.Sc. thesis. He was Macleay Fellow of the Linnean Society of New South Wales in 1911, and Rockefeller Fellow during 1930–31; he was elected a member of the Royal Irish Academy in 1934. In the Second World War he was Chief Casualty Officer (Civil

Defence), Belfast, and received the M.B.E. for his services. His many friends wish him a happy and fruitful retirement.

Baron Roland von Eötvös (1848–1919)

ON July 27 the centenary occurs of the birth of the distinguished Hungarian physicist Baron Roland von Eötvös, who in 1891 founded the Hungarian Mathematical and Physical Society and was long the president of the Hungarian Academy of Science. Both his grandfather and great-grandfather had held high office under the Austrian crown, and his father Baron Josef von Eötvös (1813–71) was at one time Minister of Public Instruction. Born at Budapest, the younger Eötvös was educated at the University there, but studied later under Kirchhoff, Helmholtz and Bunsen at Heidelberg, and under Franz Neumann at Königsberg. He became a *Dozent* in physics at Budapest, and in 1872, at the age of twenty-four, was appointed to the chair of theoretical physics, and later was transferred to the chair of experimental physics. Known widely for his invention of the torsion balance for the investigation of gravitational anomalies, he was recently referred to by Prof. A. O. Rankine as "the father of geophysical prospecting for oil, even if a hesitant one". He died at Budapest on April 8, 1919, at the age of seventy.

European Meteorological Telecommunications Panel

AN international conference was held in London during July 5–10 to consider the problems which confront European meteorologists in the exchange of weather information. The meeting took place under the auspices of the International Meteorological Organisation, which recently decided to establish a meteorological telecommunications panel under each of its six regional commissions. This was the first meeting of the panel for the European region, and it was attended by meteorologists and telecommunications experts from Belgium, Eire, France, Great