

SCIENTISTS IN PERTH.

EIGHTEENTH SESSION OPENS

RECEPTION AT TOWN HALL.

INDUCTION OF NEW PRESIDENT.

INAUGURAL ADDRESSES.

The 18th annual session of the Australasian Association for the Advancement of Science was opened in Perth yesterday. At noon the delegates were formally welcomed to the city by the Mayor, and the objects and methods of the Association were explained by the retiring president, Sir John Monash, who spoke in response.

In the afternoon there was a formal meeting of the council, at which the office bearers for the ensuing year were elected, and later, in the gymnasium of the Perth Modern School, Mr. G. A. Julius, the chairman of the recently re-organised Council for Scientific and Industrial Research, delivered an address, reported separately, on the task which the council had been appointed to perform and the way it was grappling with its problems.

In the evening at the Perth Town Hall, Sir John Monash formally laid down his office as president, and Professor E. H. Rennie, of Adelaide University, was installed as his successor. The new president delivered his inaugural address on the Structure of the Atom and on the Chemical Exploitation of Australian Plants.

To-day the association will be busy with a full programme of sectional meetings, addresses and discussions.

Civic Reception.

"Links That Bind Australia."

Visiting delegates to the conference of the Australasian Association for the Advancement of Science were tendered a civic reception at the Perth Town Hall yesterday. On the platform with the Mayor (Mr. J. T. Franklin) were Archbishop Riley, the Chancellor of the University of Western Australia (Dr. Saw, M.L.C.), Major-General Sir J. Talbot (Hobbs), the retiring president of the association (Lieut.-General Sir John Monash), the president-elect (Professor E. H. Rennie), the New Zealand Government Statistician (Mr. Malcolm Fraser), representing the New Zealand Government, the Queensland Registrar-General (Mr. G. Porter), and Mr. T. Waites, representing the New South Wales Government. An apology was received from the Honorary Minister for Health (Mr. S. W. Munsie).

In welcoming the visitors, the Mayor said that the progress of the States must depend largely on the application of science to industry. Science would be able to point the way to the resuscitation of the languishing gold-mining industry, and its application was urgently needed in the timber industry to prevent the enormous waste of material that might be converted into valuable by-products.

Dr. Saw welcomed the delegates on behalf of the University of Western Australia. We would ask them, he said, not to judge the utility of the University by the buildings in Irwin-street. During its infancy the war and the consequent financial stringency had made extreme economy necessary, and had prevented the University from being suitably housed in permanent quarters. However, the difficulty of permanent habitation would probably be removed in the near future. He did not want to over-estimate the value of suitable buildings, for the main functions of a university could be carried out effectively in quite humble surroundings. The great Pasteur had worked in an attic in equalid surroundings, and the noted German scientist, Dr. Koch, had experimented and made many of his discoveries in the laboratory of a country practitioner. The important factor was the spirit which animated the staff, and which they were able to communicate to those studying under them. At the same time, one must not underestimate the value of buildings, and those who had been at Oxford and Cambridge realised that even the most unimaginative student who spent three years under the shadow of those magnificent buildings must imbibe to some degree the spirit and ideals that encouraged the founders of those great institutions. The Premier had given his assurance that this year he would proceed with the erection of a new science building at Crawley, and they hoped that, now that they were within reach of the magnificent bequest

of the late Sir Wintarop Mackell, their first Chancellor, they would be able to do their part toward erecting some buildings worthy of the great bequest. He wanted also to pay a tribute to the governing director of the "West Australian," Mr. Alfred Langler, to whose wise guidance it was largely due that the University would be able to receive such a magnificent bequest.

In responding to the welcome, Sir John Monash expressed the delegates' appreciation of the hospitality extended to them since their arrival. The association was holding its first conference in Western Australia, and the visit reminded delegates poignantly of the isolation which Western Australia and its people had suffered for more than half a century, when they were physically and spiritually cut off from the rest of the continent. During the last 30 or 40 years there had been some striking events which had helped to forge closer and closer the links that bound Australia together. First came the discovery of gold, which turned the covetous attention of the people of the Eastern States to Western Australia and gave a great impetus to development. Then came the war, and it needed but the war to make all Australians, particularly Australian soldiers, realise that they were of one nation. Then came the trans-Australian railway, and, lastly, the visit of the Association for the Advancement of Science, because it definitely brought Western Australia and the people of the State into the fold with which the association had tried for so many years to surround itself. The prime objective of the association was not to meet together as scientists for the exchange of ideas, but to interest the general public in scientific effort. Science could not progress unless it was adequately endowed. Special endowment for science was necessary, whether it was obtained from private munificence or public subsidy, and in any community neither would be available unless scientific effort were backed by popular sentiment. In the last resort, success depended upon the popular mind. Science was now a part of national life. The world had developed so much in the last half-century that all civilised communities realised that they could not blunder forward by rule of thumb. They had the whole of the resources of the scientific world to guide them, and the more they learned the bigger and bigger became the field that was being constantly opened to them. Australia, in particular, had magnificent possibilities, but it had also a plethora of serious problems. The association stood for the application of the talent and genius of Australian men and women to those problems, and for the awakening of an active public interest in the work so that in due course the necessary financial and other support would be forthcoming.

Professor Rennie said that at first many of them had doubted the possibility of holding a successful conference so far away, but with their arrival in Perth their fears had been dispelled, largely due to excellent preparations that had been made by Professor Wilmore and Mr. Maitland. In the East they appre-

ciated the high standard of the staff at the Western Australian University, to whom they were indebted for much scientific work.

Meeting of General Council.

Formal Business.

The first meeting in Western Australia of the general council of the Australasian Association for the Advancement of Science was held at the Modern School yesterday afternoon, the retiring president (Sir John Monash) occupying the chair. There was a large attendance.

The following office-bearers were appointed:—Treasurer: Mr. D. Carment (New South Wales); permanent honorary general secretary: Dr. A. B. Walkom (New South Wales); local State secretaries: Mr. C. T. White (Queensland), Dr. A. B. Walkom (New South Wales), Mr. E. R. Pitt (Victoria), Mr. A. Gibb-Maitland (Western Australia), Mr. C. E. Lord (Tasmania), Professor C. C. Farr (New Zealand).

The chairman announced that the Mueller Memorial Medal committee had decided to award the medal to Professor F. Wood Jones, of the University of Adelaide, for his researches into the zoology and anthropology of South Australia. (Applause.)

It was decided that the twentieth meeting of the association be held in Brisbane in May, 1930, it having already been arranged to hold the nineteenth meeting in Hobart in January, 1928. Mr. R. H. Cabbage, one of the Commonwealth's representatives, was appointed president-elect for the Hobart meeting.

Professor N. T. M. Wilmore announced his resignation from the office of State secretary in Western Australia, on account of the pressure of other duties. It was decided to place on record the council's appreciation of Professor Wilmore's great services in organising the Perth meeting.

Another vote of appreciation was to the Commonwealth Government for the practical assistance it had rendered in connection with the meeting.

The council will again assemble, at the Modern School, at 2.30 p.m. to-morrow.

The Induction.

The formal induction of the new president of the Australasian Association for the Advancement of Science (Professor E. H. Rennie) took place in the Perth Town Hall last night, in the presence of the Governor (Sir William Campion), and a very large and interested audience. The ceremony was performed by the retiring president, Sir John Monash, who said that in relinquishing the duties, responsibilities, and privileges, he experienced a feeling of relief, tempered by regret at severing his intimate association with officers who had yielded him zealous and loyal support. He felt that it was the wish of every member of the association that he should pay tribute to the invaluable services rendered it by Mr. E. C. Andrews, the permanent general secretary, who, through the stress of his duties as principal geologist in New South Wales, had regretfully found it necessary to sever his connection with the association. They tendered him unanimous gratitude for his invaluable services. (Applause.)

It was his last privilege as president of the association, continued Sir John Monash, to induct the president-elect, Professor Rennie. (Applause.) It was customary to give a brief account of the qualifications which fitted an incoming president for his high office. To begin with, Professor Rennie was an Australian. (Applause.) He possessed also what an ancient Greek had considered the first requisite of happiness: he was born in a famous city—Sydney. (Applause.) He came of an intellectual family which had high ideals of citizenship. At an early age the new president had won his M.A. at Sydney University, and had, while still very young, taught in Sydney and Brisbane. He had then gone to London, where after four years he had won the coveted distinction of D.Sc., being the first Australian to secure that distinction. After useful experience in a London hospital and Technological School, Professor Rennie had returned to Australia, and in 1885—41 years ago—had been appointed Angus Professor of Chemistry in the University of Adelaide. In that chair he had achieved a reputation for his genius for teaching, which could be summed up in one word—"sound." He had been six times President of the Scientific Society of South Australia, and more than once Deputy Vice-Chancellor of his university, where he had demonstrated a high ability in administration and organisation which would stand him in good stead in the high office to which he was now being called. During an unbroken period of forty years he had conducted researches into the properties of Australian plants, publishing the results locally and in London. This was a striking record.

Amid loud applause, Sir John Monash then congratulated Professor Rennie upon his accession to office, and formally introduced him to the audience as president of the association.

Presidential Address.

Utilising our Plants.

Professor E. H. Rennie, the newly installed president, opened his address with appreciative references to the work and personality of two members of the association who had died since its last meeting in South Australia. They were Messrs. J. H. Madden and Henry G. Smith.

Atomic Structure.

The earlier part of the address proper was given up to a review of recent researches into the structure of the atom. The Professor reviewed recent researches of Professor Millikan, which dealt with the existence of what are known as "cosmic" rays. Physicists, he said, had become aware of a radiation of an exceedingly penetrating nature, that is of very short wave-length, far shorter than that of the X-rays, which until recently were the shortest known. These rays were, in fact, only about one fiftieth of the length of gamma rays, or about one ten millionth of that of ordinary light. The most penetrating X-rays used in hospitals could not pass through half an inch of lead, but Millikan had shown that "cosmic" rays could pass through the equivalent of six feet of lead. They came into the earth from outside with equal intensity at all hours of the day and night, and with practically the same intensity in all directions. What their origin might be was a matter for speculation. From what was known of them, Millikan supposed that they must be due to some sort of transformation going on within the nuclei of atoms, but if so it must be far more energetic than any transformation of which they had knowledge, such as was manifested in radio-activity. The energy involved was comparable with that developed by the capture of an electron by a positive nucleus, and Millikan considered that this kind of thing was a probable source of these rays. The possibility of transmuting mercury into gold by powerful electric discharges was touched upon by the president, who said that it appeared advisable to suspend judgment for the time regarding the interpretation of experimental results achieved. Reference was made to the five "missing elements" and the president explained that three of them had recently been discovered.

Plant Products.

The remainder of the address was devoted to an exhaustive analysis of the constituents and potentialities of Australian plant products—a subject in which the president is on his own ground. Professor Rennie divided these products, for convenience, into essential oils, gums, and resins, colouring matters, poisons, and miscellaneous substances not included in any of these classes. Under the heading essential oils, the Professor gave an interesting historical resume of the interest shown in the eucalypts. Dampier, Banks, and Phillips had all mentioned the red resinous exudation which was common to all eucalypts, but Bank's papers showed that in November, 1789, he received from Phillips a bottle of eucalyptus oil. In 1790 John White, Phillip's surgeon-general, stated that an essential oil had been used by him with considerable success in treating "colicky complaints," and that he had forwarded a quart of the oil to a Mr. Wilson in England. This had probably been the first specimen of an Australian essential oil to be forwarded to Europe, and it was most probably distilled from the tree known as Sydney peppermint, which was still common in the Sydney district. Little more seemed to have been done till von Mueller in 1853 recommended the distillation of the oil as an Australian industry, and in the following year the first factory for that purpose had been established in Victoria by Mr. Bosisto. Real scientific investigation, however, dated from 1870, when the oil of *E. globulus* had been examined by Cloez in France. Since then there had been many investigations, and more than forty distinct constituents had been discovered.

Passing on to the importance of essential oils from a perfumery point of view, Professor Rennie said that boronia megastigma (the Western Australian species) had acquired special importance from the fact that two manufacturing chemists were producing from it valuable perfume. Apparently nothing of importance had yet been published respecting the nature of the oil, but from private information, which he understood would be contained in the paper which was to be read before the chemical section by Mr. W. B. Garner, he gathered that the substance constituting the perfume were as yet unknown, but were likely to be examined in the near future. The flowers were gathered in enormous quantities by a specially contrived apparatus which did not injure the plant. The extract from the flowers on evaporation yielded a green waxy material which was of intense odour, and was apparently used in its crude state for perfumery. This waxy residue decomposed if heated with steam, but almost certainly contained volatile oils to which the perfume was due. The material, however, owing to the cost of collecting the flowers and the small yield, was very expensive.

Sandalwood Oil.

In the essential oils section, the Professor left till the last that which he described as most important in Western Australia, oil of sandalwood. This was distilled chiefly from the wood of *Santalum Cyguarium*, and its importance