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if large numbers of different races were brought together in Australia. He assured the Indians that there was no hatred of the people of India. In such a case the facts should be made known. Australia depended largely on Britain keeping a hold on India, and it was worth while that the facts concerning the White Australia policy should be made known to the Indian people.

Canada's Position

While Australia contributed 18/ per head to the upkeep of the Navy, Canada contributed only 2/. The people there had stated that in the central provinces there was a large population not concerned with the sea problems and not troubled over sea defence. There was also a far greater mixture of races there, and to further the policy of goodwill they should understand each other's difficulties in these matters. There was room there for valuable information regarding the burden borne by the mother country.

Industrial and Racial Problems

Nobody was satisfied with Australia's industrial conditions, and they had been warned that the position would be worse before it was better. He thought if they put their minds and their backs into it they would be able to find the solution. Australia was in a better position to solve the secondary problems if she recognised the supreme racial problems of other countries. It was a more tragic problem than theirs. Men of British stock were breaking their hearts in those countries, trying to find the solution. The better education of the people throughout the Empire on foreign affairs was necessary. All would agree that the man who did not want world peace was either a criminal or a lunatic. But they must get down to facts and study foreign politics. It was essential to the progress of the Empire. In Australia they were remote from the world's strife and free from the imminent fear of invasion, and it was difficult for them to appreciate the psychology of people in countries in fear of invasion. An intelligent opinion by the citizens was of vital importance to the peace of the world. The great obstacles to that peace was the existence of large numbers of nationals under foreign domination, who desired to have their rights restored. It was not an insoluble problem, but it had to be taken into account when considering world peace. He asked them to consider his suggestions, and pleaded for a fuller measure of education on foreign affairs than they had that day. (Applause.)

ADV. 25-6-29

UNIVERSITY FOR CANBERRA

PRELIMINARY ENQUIRIES

Canberra, June 24.

The advisory committee appointed to assist the Government in the establishment of a national university at Canberra held its first meeting to-day. Senator McLachlan, the only Minister in Canberra just now, opened the proceedings. The meeting will continue to-morrow, and will inspect the site set aside for the university, and a series of recommendations will be drawn up for the establishment of a research institution. The meeting is not going deeply into the question of when the university will be established, financial considerations placing an early start out of the question.

The committee comprises Professor Sir David Orme Masson (chairman), Sir Robert Garron (Solicitor-General), Sir Henry Braddon, Sir G. A. Julius (chairman of the Council of Scientific and Industrial Research), Professor A. C. D. Rivett (director of the council), Sir Thomas Lyle, Melbourne, and Professor A. J. Gibson, Sydney.

REG. 25-6-29

AUSTRALIANS CAN ENTER BRITISH COLONIAL SERVICE

Committees Named To Select Candidates

CANBERRA, Monday.—To enable Australians to enter the British colonial service more easily, the Commonwealth Government has appointed the following central committee to select candidates:—Sir Brudenell White (chairman), Dr. J. H. L. Cumpston (Director-General of Health), Dr. A. C. D. Rivett (Director of the Council for Scientific and Industrial Research), Major K. Officer (Department of External Affairs), Mr. F. W. Eggleston, of Melbourne, and Mr. S. Addison (University of Melbourne), secretary.

The following have been appointed by the State universities to co-operate with the committee in the examination of candidates who cannot attend meetings of the central committee:—Sydney, Brig.-Gen. I. C. Mackay; Melbourne, Professor K. H. Bailey; Adelaide, Professor W. K. Hancock; Brisbane, Mr. M. W. Kyle; Perth, Professor F. R. Beasley; Hobart, Professor R. L. Dunbabin.

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Dr. Riley was born at St. Cross, Knutsford, England, on May 26, 1854, and was a son of the Rev. L. W. Riley. At the age of 32 he was appointed vicar of St. Paul's Church, Preston. In that year he married Miss Elizabeth Merriman, also of Knutsford. He remained at Preston until 1895, when he came to Australia as Bishop of Perth. In 1914 he was made a chaplain-general of the Commonwealth Military Forces. He was also a sub-prelate of the Order of St. John of Jerusalem. In 1920 he was appointed president of the Perth Public Library, Art Gallery, and Museum trustees' committee, and from 1916 until 1922 he was the Chancellor of the Western Australian University. He was always actively interested in the development of education in Western Australia, and particular in the establishment and progress of the University. From 1914 he had been a member of the University Senate. He leaves a widow, two sons, one of whom is Rev. T. L. Riley, of West Perth, and three daughters.

NEWS 24-6-29

UNIVERSITY CEREMONY

Degrees to be Conferred

The following candidates have qualified for degrees which will be conferred at the ordinary meeting of the council of the University of Adelaide at 3.15 o'clock on Friday afternoon.

Members of the senate and friends of graduates-elect are invited to attend.

Doctor of Medicine—Reginald Francis Matters, M.B., B.S.

Bachelor of Medicine and Bachelor of Surgery—Albert Elijah Gribble, Lindley David Hodby, Harvey Herbert Hurst.

Bachelor of Arts—Isabel Christian White.

Bachelor of Engineering—John Alexander Davis.

Adv. 25-6-29

UNIVERSITY DEGREES

The following candidates have qualified for degrees which will be conferred at the ordinary meeting of the Council of the University of Adelaide on Friday afternoon, when members of the Senate and friends of graduates-elect are invited to attend: —Doctor of Medicine—Reginald Francis Matters, M.B., B.Sc. Bachelor of Medicine and Bachelor of Surgery—Albert Elijah Gribble; Lindley David Hodby; Harvey Herbert Hurst. Bachelor of Arts—Isabel Christian White. Bachelor of Engineering—John Alexander Davis.

NEWS 24-6-29

Public Administration Diploma

It is officially stated that the council of the University of Adelaide is considering the question of providing a diploma in public administration. Regulations are being drafted, and will be submitted to the council.

ADV. 25-6-29

DIPLOMA IN PUBLIC ADMINISTRATION

The Council of the University of Adelaide is considering the question of providing for a diploma in Public Administration. Regulations are being drafted for submission to the council in due course.

ADV. 26-6-29

A cable message from London states that the following awards by Cambridge University are announced:—Senior Trinity Mathematics Scholarship, Mr. J. C. Jaeger (Sydney); Doctor of Philosophy and Botany, Mr. A. N. D. Petrie (Melbourne); Senior Exhibition Scholarships, Mr. M. Oliphant (Adelaide) and Mr. F. R. Bowden (Tasmania).

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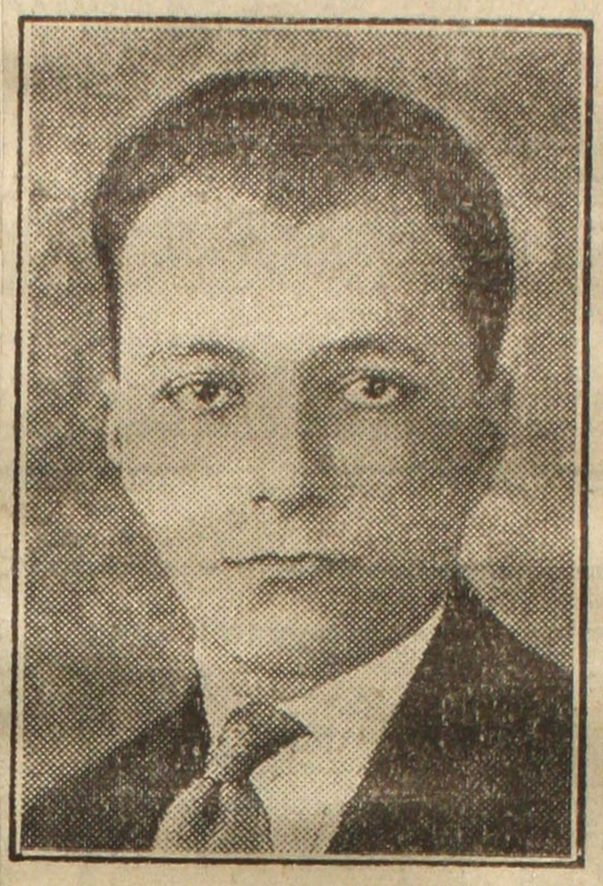
UNIVERSITY OF ADELAIDE

APPOINTMENT OF VIOLIN TEACHER

The council of the University has appointed Mr. Peter Bornstein to the position in the Conservatorium, recently made vacant by the resignation of Mr. Charles Schilsky. Mr. Bornstein, who is just under 30 years of age, is a solo violinist of exceptional ability. He was born in London of Russian parents, and has been teaching there for several years past. He is also well-known as a solo player on the Continent, and his wide experience includes an extensive knowledge of chamber music and orchestral playing. His training as a violinist was principally derived in Berlin, where he studied for seven years under the great teacher, Fiedemann, and also at the famous Stern Conservatorium, where he was a contemporary of Toscha Seidel, who was heard as a violin soloist here three or four years ago. Mr. Bornstein is at present leading violinist in the Pavlova Orchestra, and it is expected that he will remain with the company until it reaches London. He will then immediately return to Adelaide and take up his work in the Conservatorium at the beginning of October, when the fourth term begins.



Mr. P. Bornstein.

ADV. 26-6-29

POWER ALCOHOL

ITS COMMERCIAL VALUE

LECTURE ON CATALYSIS

The second of a series of two lectures on "Catalysis, the Acceleration of Chemical Reaction," was delivered by Professor A. Killen Macbeth, at the Prince of Wales lecture theatre, Adelaide University, on Tuesday evening.

Professor Macbeth said he would discuss some substances of animal or vegetable origin, which answered to all the criteria of the inorganic catalysts, or those substances, which, when present in small quantities, could promote a chemical reaction. Since those were elaborated in the presence of a living organism, and were compounds of carbon, they were defined as organic catalysts. At first they were known as ferments, but Kuhne suggested the name enzyme, and that was now universally adopted. The most familiar example of enzyme action was found in the fermentation of sugar solutions with the production of alcohols. The extension of the process to use the starch of grains as a raw material for the production of the fermentable sugar took place at a much later date. It was only since the beginning of the present century, however, that the actual chemistry of the reactions had been understood, although parts of the riddle had previously been solved. In the first stage of brewing or the manufacture of spirits from starch, an enzyme, diastase, was developed in the grain. That enzyme could act catalytically and bring about the conversion of the starch into fermentable sugars, principally maltose. The diastase might be extracted by treating the malt with water, and on the addition of alcohol to the extract the enzyme was precipitated as an almost white powder. The diastase in that state retained its power to promote the conversion of starch into sugars, and it was thus seen that, although the starch splitting enzyme was produced in the presence of the living vegetable organism, its catalytic properties were not dependent on the presence of the organisms, but were centred in the diastase itself. The starch-splitting enzymes were not limited in occurrence to the case of malted grains, for they were also elaborated in animal organisms, and played their part in the digestion of starchy foods. Thus they found ptyalin in the saliva, which took the initial step in the breaking down of starches consumed into soluble sugars, which could be assimilated. Nature did not employ extremes of heat in her work, and so they found that the natural catalysts were designed to work under ordinary conditions and were destroyed at moderately high temperatures. Whereas an enzyme acted quickly at ordinary temperatures, an inorganic catalyst acted much more slowly when the reaction was hastened by heat.

Fermentation

Reverting to the question of fermentation, they found that the work of converting into alcohol the sugars formed from the starches was completed by the addition of yeast. Diverse views had been expressed as to the significance of the processes underlying alcoholic fermentation. How the sugar was converted into alcohol had long remained a riddle. It was clear, however, that the decomposition was not one that occurred in a single step, but rather consisted of a chain of intermediate decompositions. Substances such as pyruvic acid and acetaldehyde had been detected, and the generally accepted view of the transformation brought about by the yeast enzymes on the sugars was that an initial decomposition of the molecule gave such products. During the war Germany, owing to the blockade, found herself faced with a shortage of fats from which to prepare the glycerol required for explosives, such as cordite. Pasteur had found in his researches that a small quantity of glycerol was always produced during the normal fermentation of sugar. Looking into the question further, it was seen that the first intermediate scission product of the glucose would, by the addition of two hydrogen atoms, be converted into glycerol, if those hydrogen atoms were available in the fermentation decomposition, instead of being taken up by the acetaldehyde, which was more reactive. On removing the aldehyde by the addition of a cheap reagent such as sodium sulphite, the hydrogen became fully available for glycerol formation, and for a period during the war 1,000 tons a month of glycerol were produced in Germany by that method.

Commercial Value of Power Alcohol

Alcohol had been shown by laboratory tests and road trials to be an effective fuel for the internal combustion engine, without involving any essential modification of the present type of engine. In the production of power alcohol a cheap raw material was required, the use of which would not interfere with food supplies. As long as the sun shone and plants grew there was always that raw material available in the vast quantities of tropical vegetation which yearly stored the solar energy. The cellulose of wood could be converted into fermentable sugars by heating with acids, but that introduced additional costs. Elaborate surveys of potential sources of starch and sugar bearing materials suitable for conversion into alcohol had been made, and the possibilities of a host of materials had been closely examined. The yields of alcohol from such materials had been exactly determined in order that the economics of the question might be studied. When all labor costs for the materials delivered at the factory, and in addition the cost of converting the cellulose or starch into fermentable sugars, were considered, it was seen that the outlook for the production of power alcohol to compete with petrol was not hopeful or possible at present prices. One avenue, by which costs might be further reduced, had still to be explored, namely, a biological method of degrading the cellulose material into fermentable sugars; but even with that problem solved, it seemed fairly certain that fermentation alcohol would still find it difficult to compete with petrol at present prices. Molasses, the waste material in the manufacture of sugar, were being fermented at several factories in Great Britain and Queensland, for the production of industrial alcohol. It was freely admitted in Great Britain that the original purpose for which the factories were erected, the production of power spirit, was incapable of realisation. Even should petrol rise in price to a figure which would make that process competitive, molasses could scarcely serve generally as a raw material, as all the molasses in the world would yield a supply of spirit small in relation to the demand for motor fuel. The development of biological methods of degrading cellulose material to sugars, therefore, seemed essential as a first step towards general production, ready for the day when prices rise—if it ever came.

Synthetic Rubber

Fermentation might be controlled by using special yeasts. Suitable yeasts were grown in the laboratory, and were known as cultures. Special cultures directed the fermentation in different ways, according to their characteristic properties. That point might be illustrated by reference to the case of synthetic rubber. It had long been known that rubber when decomposed by heat yielded a volatile liquid called isoprene. That was also obtained by the distillation of turpentine. In the late eighties it was found that isoprene under cer-

ounce, research university.