Register 18. 12 24

PROFESSOR KERR GRANT'S VISIONS.

FLYING TO THE MOON.

AND OTHER SCIENTIFIC ADVENTURES.

In a lecture of fascinating and absorbing interest at the University Commemoration in the Elder Hall on Wednesday, Professor Kerr Grant, treating of "Things unattempted yet," discussed the speculations on some possibilities of human achievement and adventure both in the near and in the more remote future. Lack of space precludes the possibility of publishing the lecture in extenso, but here are extracts regarding the points of more startling interest.

The professor said:—"It is clear that discoveries are unpredictable, or, rather, predict as we may, the unpredictable will burst forth in startling unexpectedness. Such a discovery was Becquerel's first observation on the photographic action of compounds of uranium. Of such discoveries none can foretell more than this, that, as the unexpected has happened before, so it will happen again.

Of developments, however, we may say more, and much with confidence. Sir John Monash, in his presidential address to the Australian association last August, outlined in masterly fashion and with unimpeachable certitude the future developments of the vast electric power scheme based on the brown coalfields of eastern Victoria, which in the near future will make this corner of Australia one of the world's most populous and productive centres of industry. I propose to give some concrete illustrations of projects in human achievement of a more adventurous type, made possible by modern science and modern technology.

The Parsons Shaft.

As my first example, I take that bold project of the famous inventor of the steam turbine, Sir Charles Parsons, the sinking of an exploring shaft into the earth to a depth far exceeding that of the deepest existing mine or bore. Sir Charles puts a provisional limit of 12 miles to the depth of his shaft. It appears somewhat doubtful, whether a shaft 12 miles deep would afford more than a confirmation of conclusions already based upon observations on mineshafts and bores, and revealed by denudation in mountain chains. It seems probable that the condition of the earth's interior at a 12-mile depth differs from that of the surface layer, mainly in its higher temperature—Parsons estimates this at 272 deg. F.—and in the already immense pressure—probably 7,000 to 8,000 times atmospheric pressure—due to the weight of the overlying rocks.

Sir Charles Parsons allows 10 years for the attainment of a depth of two miles, and 85 years for 12 miles. His estimate of the cost in 1904 was £3,000,000, which he has increased to £20,000,000. He justifies this expenditure of time and money on the ground that it would lead to new and probably extremely valuable extensions of our knowledge of the condition of matter in the earth's interior, and possibly, of course, reveal the existence of mineral deposits of economic value at great depth.

To these considerations I would add two others. In the first place, it is unquestionable that the earth's interior is extremely hot; and may be looked upon as a vast reservoir of heat. If it were possible to tap this reservoir and bring the heat to the surface, we should have a source of motive power to supplement the rapidly diminishing residues of the coal and oil deposits on which we are now drawing so lavishly and so improvidently. Since this is a matter of vital interest to the future of civilization, no proposal that holds out even the slightest hope of such a result should be lightly neglected. Secondly, while it is most probable that this internal heat is a residue of the first heat of the original molten mass, it is possible that a certain fraction of it may be produced by disintegration of radium or its fellow elements of the radio-active class. Although, under pressures hitherto obtainable in the laboratory, no change can be produced in the activity of radium, this might not continue to be the case under pressure 10, one hundred, or even one thousand times greater. Any proof that the stability of atoms is thus affected by pressure would carry with it important consequences, both for scientific theory and for practice. For a satisfactory test of this question the earth should be explored to depths far greater than that contemplated by Sir Charles Parsons. And though his project as it stands may seem sufficiently ambitious for the next two or three generations, we may be sure that those that follow would not rest content with its accomplishment.

Mount Everest Observatory.

During the past five years three separate expeditions organized by the Royal Geographical Society have made an assault on the highest mountain in the world, Everest of the Himalaya Range, in Tibet. These expeditions have been directed by men most competent, staffed by the most daring and skilful mountain-climbers, and equipped with every aid to success that experience and foresight could suggest, yet the mountain remains unconquered. Further attempts will doubtless be made. But if success is finally attained what, apart from the incidental increases to knowledge which come with every difficulty faced and overcome (and the value of these is not to be rated lightly), is the fruit of that success? We may picture the successful climber standing victorious on the summit, waving his hands and uttering a shout of triumph, if indeed the terrible lassitude due to oxygen starvation, will allow of even these feeble demonstrations. A picturesque attitude, an heroic gesture. And nothing more.

Now, I put forward as an extension of this scheme of conquest worthy of consideration for the far greater results which would flow from its accomplishment—the establishment of a permanent observatory on the summit of Mount Everest. Of the enormous value of such an observatory there can hardly be a question. It would be unique among the observatories of the world. For obtaining permanent meteorological records at high altitudes it would have a unique and immeasurable advantage over any observatory in existence, and our present knowledge of the upper air is in many respects so incomplete, its pressures, aerodynamical, chemical, electrical, thermal, so various and of such great interest, that this in from the scientific viewpoint a powerful reason for the execution of any scheme which would assist in their solution. Yet another may be suggested for a station on the summit of Everest. It would serve as the best possible "jumping off" place for an assault upon our satellite, the moon, and this brings me to my third and most adventurous project.

Communication with Moon and Planets.

Although inter-lunar transport offers great difficulties, in the light of our present scientific and technical knowledge, there is no reason for believing that such difficulties are insurmountable. Professor Goddard, of Clark University, Massachusetts, has put forward in some detail a proposal for propelling a rocket through space beyond the earth's atmosphere. He is satisfied with the feasibility of his idea, the application of which he proposes to limit in the first instance to the exploration of the higher reaches of the earth's atmosphere, using a rocket carrying self-recording instruments. He regards it, however, as a practical possibility to launch a rocket, driven forward by successive explosions of nitroglycerine, or by continuous combustion of stored hydrogen and oxygen in liquid form, which would pass through the earth's atmosphere and, rightly aimed, traverse the inter-lunar distance and strike the surface of the moon, signalling its impact to observers on the earth by a flash of light.

The fact that reaction is possible between radiation and matter, no less than between matter and matter, makes it not utterly incredible that some form of "etherplane," propelled, like the tail of a comet, by light-pressure from its own body, may be the future form of interplanetary locomotive. But for such a method of transit we must have supplies of energy of far greater concentration than such as we now possess in coal, oil, or any other form of chemical reagent. Is there a prospect of such sources being discovered and made amenable to control, either in the near or in the more remote future? This question is of mightly import to humanity.

Future Sources of Energy.

It is by the use of tools, in the widest sense of the word, and by the control of energy, other than that supplied by the vital processes of his own body, that man has raised himself above the level of other animals, once his equal in the scale of being. The extent to which a nation utilises energy is indeed perhaps the truest test of its place in the scale of civilization. All natural sources of power would pale into insignificance were it possible to unlock the stores of energy contained within the atoms of matter. The energy of combustion, which is our present main source of supply, is due to forces drawing together atoms of different kinds, such as the atom of hydrogen and the atom of oxygen. Its liberation as heat may distort somewhat the outer shell of electrons in the atom, but affects its innermost structure no more than the convolutions of the grey matter of the brain are affected by the operations of the barber.

There are two ways in which intra-atomic energy may become of service as a motive agent. The first is by affording a means of storing energy obtained from natural sources in much greater concentration than is possible by any present method. The best and most widely used of present methods is that employed in the electric storage battery, as used in power houses for equalising the load on the generators and in motor cars for starting the engine, and for these and similar purposes the battery has great industrial value. But the great desideratum is a material vehicle of energy which would convey the energy generated at the mouth of a coal mine or waterfall, with a minimum expense and with perfect safety, to other parts of the earth, and there being used with 100 per cent. of efficiency of conversion as a source of electrical or mechanical power. No such agent is at present known.

Homage to Pioneers.

Many more are the lofty summits which show themselves to the traveller on this path, and many more to those who follow the paths which are being hewn into the wilderness by workers in sister sciences. Other peaks doubtless lie unperceived, to be blundered on at chance by some explorer off the beaten track. Others, we cannot doubt, lie beyond our present horizon. It is well that we should lay down for ourselves a programme of exploration. But in doing so we must not forget that the success of an expedition is won not merely on the actual field, but also in the factories which supply its equipment; in the inventor's workshop or the experimental laboratory in which the appliances, the tools, the measuring instruments, are designed; in the study, where the principles and the theories on which all applications of science are based have been conceived and elaborated. And among those who thus labour at the foundations of science there appear from time to time those mighty minds to whom the divine, the august, privilege has been granted to "voyage in strange seas of thought—alone." Galileo, Newton, Faraday, Maxwell, Einstein. These are the master explorers who reveal to us the existence of new lands all unsuspected before. These are the pioneers in the great enterprise of our race, the leaders in the great human adventure. They are the path finders. To them let us offer our fervent gratitude, our sincere admiration, our humble homage."

UNIVERSITY COMMEMORATION.

A Year of Growth and Development.

The Conferring of Degrees.

The many brilliantly coloured academic hoods gave a kaleidoscopic effect to the dignity of the proceedings in the Elder Hall of the University of Adelaide on Wednesday, on the occasion of the annual commemoration, which marks the conclusion of the University year.

Members of the Senate, Council, and staff entered in procession shortly before 3 o'clock to the strains of "The song of Australia" played on the grand organ by Dr. E. Harold Davies. The clerk of the Senate led, followed by Bachelors of Music, Science, Engineering, Arts, Dentistry, Medicine, Laws, Masters of Engineering, Doctors of Music, Science, Dentistry, Medicine, Laws, then the Warden of the Senate, the teachers of the Elder Conservatorium, the lecturers of the University, the professors of the University, the Registrar, the Council, and members of the boards, the Vice-Chancellor and the Chancellor. At 3 o'clock His Excellency the Governor (Sir Tom Bridges) was received by Professor Rennie and conducted to the platform.

In opening the proceedings the Chancellor thanked His Excellency for honouring them with his presence. It was gratifying to know that he attended the commemoration not only as a representative of His Majesty the King and visitor of the University, but from a deep personal interest in the work in which they were engaged. Last year they had had the privilege of listening to Professor Wood Jones on the position of anatomy in modern medicine. This year they would have the pleasure of hearing Professor Kerr Grant on an equally fascinating topic. The absence of the Vice-Chancellor was accounted for by his having had to leave for Scotland to deliver the first of the Gifford Lectures at the University of Aberdeen. (Applause.) He was expected back at Easter. Meantime Professor Rennie had kindly undertaken the duties of the Vice-Chancellor. The compliment paid to Professor Mitchell led him (the Chancellor) to the matter of complimenting Sir Douglas Mawson on his having attained a fellowship of the Royal Society. (Applause.) That great honour had fallen to residents of South Australia on only two previous occasions in the persons of Sir Charles Todd and Sir Edward Stirling; but two former professors had been thus honoured, Professor Lamb and Sir William Bragg, and also one of their own graduates, Mr. W. L. Bragg, the joint winner (with his father, Sir William Bragg) of the Nobel Prize for physics in 1915, and now Professor of Physics in the Victoria University at Manchester.

The Urrbrae Gift.

Proceeding, the Chancellor referred to the splendid benefactions of the late Mr. Peter Waite. After the fullest consideration in which they had been greatly aided by the enquiries in England by Professor Mitchell, Sir George Brookman, and Mr. W. J. Young, they had resolved to establish the Agricultural Research Institute at Urrbrae and create two new chairs to be known as the Waite Professorship of Agriculture, and the Waite Professorship of Agricultural Chemistry. For the former they had appointed Dr. A. E. V. Richardson, a graduate of the Adelaide University, who had done much good work in Victoria, and for the latter Professor J. A. Prescott, a Master of Science of the University of Manchester, who in 1918 became the superintendent and head of the chemical department, and had done much experimental work in Egypt. Their good fortune in securing the services of those gentlemen was greater than they had dared to hope for, and the future success of the institute could now be regarded as fully assured. Much preliminary work had yet to be done, and results were not to be expected at once, but no time would be wasted and no reasonable effort spared to accomplish the purpose which Mr. Waite had in mind.

New Appointments.

The vacancy in the Chair of Modern History caused by the retirement of Professor Henderson, had been filled by Mr. W. K. Hancock, of Balliol College, Oxford, and a former Rhodes Scholar of Victoria. He had obtained first-class honours in modern history and was elected a fellow of All Souls. That distinction had never before been conferred on an Australian. Mr. Hancock would not be free until March, 1926, as his fellowship required him to remain at Oxford for another year. Two new teachers had been appointed in the Elder Conservatorium. Mr. C. Schilsky, an associate of the Royal College of Music and the Royal Academy of Music, took the place of Mr. Gerald Walenn as teacher of the violin, and Mr. Clive Carey, Bachelor of Arts and Bachelor of Music, a pupil and assistant teacher of the famous tenor Jean de Reszke, had accepted a position as a teacher of singing. The resignation of Mr. C. R. Hodge as Registrar took effect in February, and the Assistant Registrar (Mr. F. W. Eardley) had been promoted to Mr. Hodge's place, to the satisfaction of every member of the University. (Applause.)

Endowments and Gifts.

While the recollection of Professor Wood-Jones's address was still fresh in their minds, said Sir George, he would mention that he had published during the year the second part of his work on mammals of South Australia, and laying science aside, he was taking front rank as an essayist of singular imagination and charm. (Applause.) Other original work had been done in the various faculties of which the complete record was not available. Endowments and gifts received during the year included £750, of which £650 had been raised by public subscription, and £100 given by the Old Scholars' Association of the Methodist Ladies' College, Adelaide, for the purpose of founding a special library for the study of psychology in memory of Miss Sarah Elizabeth Jackson. The sum of £500 had been given by Mrs. A. E. Ayres, £300 by Mr. James Gartrell as a prize in elementary ethnology and comparative philology. Gifts of books from Sir Josiah Symon, and many other books and materials, had also been donated, and their thanks were due to the donors for those evidences of their interest and goodwill. The memory of the name of Marks in connection with the munificent gift of £50,000 to the medical school had admitted the alteration of the title of the Chair of Medicine to that of the Marks Professorship of Pathology, and the establishment of a lectureship in applied physiology, to be known as the Marks Lectureship. The equally munificent gift of Miss Keith Sheridan for the advancement of medical research had admitted of the establishment of a fellowship in medicine, known as the Keith Sheridan Fellowship. He had mentioned three years ago the resignations of Mr. Frederick Chapple and Mr. T. A. Caterer as Warden and clerk of the Senate. This year it was his sad duty to report that both had passed away. Both would be long remembered in the State for the great influence they exercised as scholars of exceptional force and ability, and for their services as officers of the Senate and members of the council.

St. Mark's College.

An event of outstanding importance was the affiliation with the University of a new residential college. He would not enter into a discussion on the relative advantages of residential or non-residential University life. He had had experience of both, and without hesitation he would declare himself as a supporter of the former. (Applause.) St. Mark's College would have the distinction of being the first to be established. In wishing it success he hoped its foundation would soon be followed by others. Age counted for something in the practice of a college, and he suggested that St. Mark's be not allowed to have too big a start. (Laughter.) He regretted that the progress of the erection of the engineering and physics laboratories had been disappointing. It had been hoped that they would have been completed in time for the jubilee of the University in August, 1926, but it was feared now that those hopes would not be realised.

Use of a Microphone.

An interesting feature of the address was the installation, at the request of Professor Kerr Grant, of a microphone and loud speakers as a demonstration by the Adelaide Radio Company. The installation, which included four loud speakers disposed at different positions about the hall, was similar to that used in amplifying the speeches at the Wembley Exhibition functions. In the course of Professor Grant's lecture the microphone was switched off to enable the audience to observe the difference in the volume of sound. The experiment was readily appreciated by the auditors in the back seats.

A report of the commemoration lecture will be found in another column.

Degrees and Diplomas.

The Dean of the Faculty of Law (Professor Coleman Phillipson) presented the following candidates for degrees in laws:—Maurice William Bednall, Roland Richard Burtery, Lancelot Townsend Gun, Cecil Austin, Hewitt, Edna Lucy Holmes, B.A., Cecil James St. Leger Kelly, Patrick Joseph Kelly, Peter Paul McCarthy.

The Dean of the Faculty of Medicine (Dr. H. Swift) presented the following candidates for degrees in medicine and surgery:—Charles Mervyn Deland, Myles Landmer Formby (Emerson and Rhodes scholar), Ian Aylife Hamilton, Ernest John Keith Harbison, John Harris, Gordon Maxwell Hone, Benjamin George Johnston, Allan Dunstan Lampe, Raymond Jack Last, Friedrich Berthold Leibnachke, Neil Horace Monday, Rupert Leslie Naylor, Henry Edwin Pellew, Cyril Thomas Piper (Elegard Scholar), Mary Ethel Rayner Reed, Harold Mitchell Rees, Arthur Douglas Reid, Eric John Swann, Thomas Wilson Tassie.

The Dean of the Faculty of Dentistry (Sir Joseph Verco) presented the following candidates for degrees in dentistry:—Degree of Doctor of Dental Science—John Andrew O'Donnell. For the Degree of Bachelor of Dental Surgery—Alec Douglas Cooks, Cecil Bonas Baldwin, Leslie Carrington Maiden, Wesley Melvyn Tillet Marshman, John William Elliott Moodries. For the Degree of Bachelor of Dental Surgery (ad eundem gradum)—Basil Wendt Leach, B.D.Sc. (Melbourne), Malcolm MacDonald Waterhouse, B.D.Sc. (Melbourne).

The Dean of the Faculty of Arts (Professor J. McKellar Stewart) presented the following candidates for degrees in arts:—Master of Arts—May Brown, Henry Brown, Kate Dalitz, Ernest Harry Jahnecke, Gertrude Teresa Law, Eleanor Evelyn Beatrice Wemyss. Bachelor of Arts—Leonard Gordon Bond, George Herbert Burke, Alec Holloway Coombe, Edward John Flaherty, Alfred Clarke Hitchcock, Doris Hunter, Ludwig Adolf Emanuel Leslie, George Thomas, Jeffery Mitchell, Lyndall Erica Morris, Flora Elizabeth Piper, Maurice Ignatius Ryan, Beatrice Mary Heywood Reynolds, Cecil Albert Richards. Master of Arts (ad eundem gradum)—Alexander Leslie Gordon MacKay, B.A. (Sydney), Albert Heywood Reynolds, B.A. (Cambridge). Bachelor of Arts (ad eundem gradum)—Beryl Jessica Miller, B.A. (Tasmania), Tom Elder Barr Smith, B.A. (Cambridge).

The Dean of the Faculty of Music (Professor Harold Davies) presented the following candidate for degrees in music:—Degree of Bachelor of Music (ad eundem gradum)—Francis Clive Savill Carey, B.A., Mus. Bac. (Cambridge).

The Dean of the Faculty of Science (Professor T. Harvey Johnston) presented the following candidates for degrees in science:—Honours Degree, Bachelor of Science—Botany—Ellen Dulcie Macklin. Physics—George Rayner Fuller. Bachelor of Science—Harry Armdale Cant, Fred Dreger, Clifford Horace Kennett, Dunn Flower, Clarence Middleton Griggs, William Andrew Hancock, Paul Samuel Hoseldis, Ross Lincoln Mayfarn, Alan Wilfred Pelzer, Alfred Andrew Rose. Bachelor of Science (ad eundem gradum)—James Arthur Prescott, Ivan Sanders, Francis Henry Humphris, Sydney Clifford Robertson, James Wearing Smith. Degrees in applied science only—Frederick William Symons.

The Chairman of the Board of Commercial Studies (Mr. S. Brunel Beach) presented the following for the Diploma in Commerce—Arthur Morris Bailey, Irene May Balbin (Fisher Medallist), George Harry Battye, Vera Ida Crale, Cuthbert Hewett Davidson, Kenneth Lionel Ingelone Giles, William George Holt, Doris May Holten, Ernest Frederick William Renwick, Clarence George Lewis, John Stephenson, Henry Birrell Elliott (Fisher Medallist).

The Dean of the Faculty of Arts presented the following:—Diploma in Education—Annie Stevens Bennett, B.A.; Frances Winifred Berry, M.A.; Henry Brown, B.A.; Norman Arthur Ireland, B.A. Diploma in Economics and Political Science—Edgar Willis Pritchard, Robert Thomas.

Scholars and Prizemen for 1924.

Faculty of Arts—Roby Fletcher Price (logic and psychology)—Albert Wilfred Pearson. John Howard Clark Prize—Phyllis Evelyn Lade. Tinline Scholarship—Dominic Paul McGuire. Barr Smith Prize (Greek)—Arthur Howard Blacket. Andrew Scott Prize (Latin)—Irene Blanche Rogers. Boadey Prize (for English verse)—Adrian Joseph Kerr (proxime, Elsie Morrise). Tormore Prize (for essays in English literature)—Vera May Seidl.

Faculty of Science—The Ernest Ayers Scholarship in Botany—Ellen Dulcie Macklin. The Tate Memorial Medal—Richard Grenfell Thomas. The John Bagot Botany Scholarship and Medal—Terence Brady Paltridge.

Faculty of Laws.—David Murray Scholarship (in international law)—Kenneth Churchill Duffield. Stow Prize—Kenneth Churchill Duffield.

Faculty of Medicine.—Dr. Davies Thomas Prize (second examination)—Alec Harding London; (third examination)—Reginald Denys Moreshook, Everard Prize (fourth examination)—Myles Landmeer Formby and Cyril Thomas Piper (equal). Dr. Charles Gosse Medal for Ophthalmology—Raymond Jack Last.

Board of Commercial Studies—Fisher Medals—Irene May Balbin and Henry Birrel Elliott (equal).

AMPLIFYING THE VOICE.

NEW DEVICE FOR PUBLIC ADDRESSES.

A unique demonstration as far as South Australia is concerned of modern methods of addressing large concourses of people which science has placed at the disposal of public speakers, was given at the Elder Hall on Wednesday, when Professor Kerr Grant delivered the annual commemoration address. As the acoustic properties of the Elder Hall leave much to be desired, the Adelaide Radio Company, at the request of the professor, had installed what is known as the Western Electric Public Address System. Placed about ten feet from the speaker was a very sensitive microphone which picked up his voice. It then passed through an amplifying device and was electrically distributed to sound projectors in various parts of the hall. The demonstration was a great success, the words of the lecturer, which were clearly heard when the apparatus was being used, being absolutely inaudible in the rear of the hall when it was dispensed with as an experiment. The system used on Wednesday was exactly similar, though of course on a much smaller scale, to that used by the King at Wembley in delivering his opening speech.

UNIVERSITY STUDENTS' CONCERT.

The annual concert of the Adelaide University students this years will be given in the Prince of Wales Theatre to-night. The programme consists of a short play by the University Dramatic Society, a humorous sketch, songs, music, and several dances, and ballets. The second part of the entertainment will be a musical comedy, the libretto of which has been written by Miss Hope Crompton, and songs and choruses for which have been selected by the musical director (Mr. Jack Glover). Mr. Frank Collison is business manager. Those taking part in the entertainment will be Misses Arthur, Bryant, Verna Hackett, Catherine Brookman, Treadey Symons, Estella Edwards, Ann Ross, Laura Day, Adam Martin, Nellie Letcher, Gladys Terrell, Lorna Bishop and Beatrice Howley, Messrs. George Letcher, Colin Kalwick, Wylton Todd, Harvey Loader, Brian Lawrence, Gordon Smith, R. Goode, R. Morris, A. Dawkins, D. McKay, R. Krantz, Hooker, Webb, Arthur Bissell, H. Elliot, R. Krantz, Reginald Thrush, Frank Charlton, Alfred Wood, George Brookbank, and Richard Watson.