

"GEOGRAPHY OF OUR HILLS."

THREE INTERESTING ADDRESSES.

Three interesting addresses on the subject of "The geography of our hills—our ignorance and its consequences" were given under the auspices of the British Science Guild in the Public Library Lecture Room, Institute Building, North terrace, Adelaide, on Monday evening. The lecturers were Professor R. W. Chapman, Professor Sir Douglas Mawson, and the Government Geologist (Mr. L. Keith Ward). Professor Brailsford Robertson presided over a large attendance. The Chairman, in introducing the speakers, said the object of the guild was to bring the facts they had ascertained regarding science into the daily life of the community.

—Mistakes of the Past.—

Professor Chapman said the desire was to obtain a better knowledge of the geography of the hills from the standpoint of the feature that was not recognised on the ordinary maps. They had many fine maps of the hills, but they had all been drawn up representing the hills in two dimensions. In carrying out engineering work they found that they lived in three dimensions. The result of their ignorance of the third dimension was plainly shown near the foot of the Adelaide hills. There, at once, were seen the mistakes of the past. Those mistakes were due to the fact that the men who laid out the first roads had not before them the full details regarding the height of the surrounding hills. In the problems which awaited them regarding the development of the hills it was obvious that contour maps would provide them with an instrument of incalculable advantage. Such a survey would prevent them from making mistakes which might easily cost much more to rectify. The making of a contour survey was an expensive item. It was estimated, he understood, in reference to a recent proposal to make a complete contour map of Adelaide and surroundings within a 10 miles radius that the cost would be £12,000. They did not desire to commit themselves to that expense. There were many Government departments in which the officers were occupied practically all their time taking levels, and it was desirable that they should be properly recorded, preserved, and made available to the public. They were available to a degree, but there was at present no systematic way of recording them for public advantage, and no way in which the most important of them were published. It was desirable that a system should be devised so that the levels should be sent in to a central office (say, the Surveyor-General's Department), placed on record, and the heights of the most important shown on the maps. There would be great development in the hills, and if they had proper knowledge of the kind mentioned it would be of incalculable value.

—Knowledge of Height.—

Sir Douglas Mawson referred to the importance geologically of the knowledge of height. He said there must be three dimensional surveys of land to give complete data for geological purposes. The geographer, too, must know heights in order to study climates. The geologist must have first his heights, the angles of dips, and the folding of strata, and then he could set down in his office and work out some of the problems which he had to unravel. The lecturer then displayed a number of models showing geological structures in the Alps and elsewhere. They illustrated the effects of weather and other forces on them. In conclusion, he said that if it could be arranged to have put on record any data which existed in the South Australian Survey Department, it would be a step in the right direction. A fair-sized sheet in respect to the Adelaide district had been roughly prepared by the Military Department but what they required was a complete contour sheet. (Applause.)

—Underground Water.—

Mr. Ward displayed a map of the world, indicating the areas where rainfall was less than 10 in. a year. South Australia, he said, had a bigger proportion of dry country than any other State in the Commonwealth. If Australia were compared with the United States the contrast was marked. The arid country demanded supplies of underground water. To meet that requirement it was necessary to distinguish between the different kinds of underground water. In the Adelaide hills practically the whole of the underground water came from sources indicated by a number of "cracks." Underground water was on a level surface, but did not always correspond with the land surface. A detailed survey of the land would do much to solve the problems connected with the occurrence of the water. In the back country of Australia the artesian basin was of vast importance. In this connec-

tion the value of the contour map indicating the height of the intake areas was referred to, and the lecturer also explained the relation of the hydraulic grade (the lines in any section to which the water would rise if tapped by a bore). He said that where the hydraulic grade dipped below the surface they could not have artesian water. The hydraulic surface varied from time to time, according to the quantity of water withdrawn from the basin. The great Australian artesian basin was the largest in the world. It had been believed at one time that the supply was practically inexhaustible. Now it was known where the sources of supply were, and it was recognised that when the withdrawals were on a larger scale than the amount of water taken in the supply must gradually decrease. One value of determining the hydraulic grade, was that it rendered it possible to decide the direction in which the movement of the water occurred. It was now definitely known that some of the older theories concerning the movement of underground waters were incorrect. Mr. Ward, in conclusion, dealt with some of the lesser artesian basins of Australia, and pointed out the necessity for a contour map, which, he said, would assist geologists to ascertain the direction of the waters. In the future even the settled and reticulated districts would probably have to supplement their surface water supply by having recourse to the underground waters.

—Appeal to the Government.—

Mr. E. C. Lucas moved that the Government should be asked to take the necessary measures to incorporate plans of measurement and height already in the possession of the Government departments, and that in all future surveys provisions be made for showing the relief dimensions. The motion was seconded by Mr. Anthony, M.P., and carried.

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ELDER CONSERVATORIUM.

THE STUDENTS' ORCHESTRA.

The series of concerts which has been notable in many ways, especially in the interest aroused, and the development in connection with concert music, not only have the chamber music efforts by members of the staff been the means of making the audiences familiar with some of the finest works of various schools and composers, but the orchestral work of the "Elder" has been of the greatest value. The students' concerts afford an opportunity for self-expression that counts for more than mere confidence and aptitude in musical performance. Character and personality are developed, as well as familiarity with all that is greatest in music. In this direction orchestral work has special value.

There was a large audience in the Elder Hall on Monday evening on the occasion of the seventeenth concert, which was given by the Students' Orchestra, with Mr. W. H. Foote, A.R.C.M., as conductor. Misses Ariel Shearer and Marie Prince were accompanists. The first orchestral number was the overture "Le Roi d'Yvetot" (Adam), with its marked character. "Valse" (Strauss), afforded contrast. Each was rendered with good effect. Mr. Foote, as a conductor, has a happy knack of evoking enthusiasm, and the members of this orchestra responded admirably to his direction. Particularly striking was the rendering of that fine composition by Walford Davies, "Solemn melody," for strings and organ, Mr. Clarence Bentley being organist. This was encored. There were several instrumental solos. Miss Constance Pether won hearty applause for her two flute solos, "Adagio nobile" (Donjon) and "Scherzo capriccioso" (Sabathil), the second being especially charming. Miss Mignon Weston's Cor Anglaise solo, the entr'acte "Maritza" (D. Wood) was also successful. Mr. C. F. Branson played a French horn solo "Cavatina" (Raff), and Mr. T. H. Sitters a bass clarinet solo "Nocturno" (Kalkbrenner). The vocalists of the evening were Miss Estelle Steinthal, who sang "The spring, my dear, is no longer spring" (Allitsen), and Miss Betty McGrath, who gave "Go not, happy day" (Frank Bridge). The concert was concluded with a striking performance of Haydn's symphony No. 4, "The clock." In this item the second and fourth movements were especially attractive.

UNIVERSITY OF ADELAIDE

EXEMPT FROM PAYING RATES.

The Municipal Corporation Further Amendment Bill was considered in committee on the motion of the Minister of Agriculture (Mr. T. Pascoe) in the Legislative Council on Tuesday. Consideration was given to a number of amendments which had come down from the Assembly. Last sitting the Council had not agreed with an amendment of the other House to bring private colleges and schools under a definition seeking to provide that they should pay half rates only. The Adelaide University was to pay no rates. Mr. T. Pascoe submitted a new clause providing that the words "rateable property" shall not apply to lands belonging to, or used exclusively as a school or college, where such lands abut upon a public street within the municipality but limiting the land to be assessed to a depth of 200 ft. from the street upon which the lands abut. The clause was carried.

A similar clause to apply to municipalities which rated under the Land Values Assessment Act was brought forward by the Minister. Members appeared to be equally divided for and against.

Mr. J. Jelley said the value would be determined upon measurement of frontage values only, and that would be unfair. The Adelaide Council was the body which was responsible for the upkeep of the roads and footpaths and the Bill sought to say that the Adelaide University, occupying a very valuable frontage and enjoying privileges of the works of the corporation's provisions, need not help to pay for those privileges. He intended voting against the amendment.

On the voices the president declared for voting (9 for and 9 against). The president gave his casting vote in favor of the clause. The Minister of Agriculture (Mr. Jelley and Mr. Duncan were appointed a committee to draft reasons to submit to the Assembly for approval or otherwise.

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WORKERS' EDUCATIONAL ASSOCIATION.

BREAK-UP SOCIAL.

The most successful year in the history of the Workers' Educational Association in this State was concluded on Saturday night with the students' break-up social. Over 400 persons gathered in the Way Hall. In the absence of the president of the W.E.A. (Mr. F. McCabe), Dr. H. Heaton presided. Items were given by Miss Ada Wordie, the tutorial class, under the conductorship of Mr. E. Wallace Packer, and by Messrs. Lorking and Ferris.

Professor Mitchell, Vice-Chancellor of the University, gave an interesting description of the structure and work of the Adelaide University. He said its constitution and method of control was in many respects a model form of democracy. He gave illustrations of the way in which the University was endeavoring in spite of great obstacles, to discharge its two functions of making and imparting knowledge.

Professor Darnley Naylor, chairman of the joint committee of tutorial classes, spoke in commendation of the tutorial class movement as a factor in spreading adult education.

Professor Strong dealt with the value of the study of literature and showed that such study might act as a common bond in linking together men of different social classes and opposing beliefs in any community. He said a knowledge of the literature of other countries would help to give a sympathetic understanding of the point of view of other peoples, and would help to break down international ignorance and suspicion.

Dr. Heaton described the current year as a record one in every respect. The number of tutorial class students had doubled, and was now nearly 700. The Brighton summer school was one of the most successful ever organised in Australia, and the W.E.A. Club had fostered a spirit of good-fellowship and capacity for enjoyment such as one associated usually with undergraduates. The successful work of the year was due partly to the excellent tutors in charge of the classes, the secretary (Mr. G. McRitchie) in charge of the propaganda, the widespread advertising and publicity, and also to the fact that people were awakening and beginning to ask why the world was so awry. The field of adult education in this State was as yet scarcely touched, and both on the West Coast and in the River Murray settlements he had found people asking that the facilities provided by the University and the W.E.A. should be extended to the outback areas.

OBSERVATORY WANTED.

In Central Australia.

Government Astronomer's Plea.

Following upon the recent solar eclipse, and the ideal climatic conditions encountered in the centre of Australia for astronomical observations, it is considered that an observatory should be established there. Such a place, equipped with the latest modern appliances, would afford opportunities for advanced studies, which are not possible at present. When seen on Tuesday afternoon regarding the matter, the Government Astronomer (Mr. G. F. Dodwell, B.A.), who is strongly in favour of the scheme, pointed out the possibilities of such an establishment, and advanced arguments in favour of it being erected. He said during his two journeys to the interior he had ascertained how suitable the place was for astronomical work. When he was with the Muegrave Range expedition in 1914, for latitude and longitude work he used a field almanac instrument. The interior was characterized by a dry and clear atmosphere and cloudless skies. From Moorilyanna he could see with binoculars Mount Ferdinand, 61 miles distant. At Cordillo Downs, where they used large instruments lent from America, they noted the perfect definition of the sun, moon, and corona. The large-scale photographs they secured were equally good with those he had seen in the best observatories of the world during his recent visit to Europe and America. Capt. S. A. White, who had made many journeys into Central Australia, and other travellers, had more than once remarked on the great visibility, particularly at Alice Springs. Mr. E. Kidson, who was in charge of the Washington Carnegie Department Magnetic Survey in Australia, commented favourably on the visibility north of Oodnadatta. From one point he could see through the theodolite telescope a smoke column from a train 45 miles away, and, by the movement of the smoke, he could observe when the train was shunting, and so on. The view had often been expressed to him that Alice Springs should have been an astronomical station, and 20 years ago a movement had been started with that end in view.

—Examples for its Establishment.—

Continuing, Mr. Dodwell said it could be used purely as an observational station. Large European and American observatories had similar branches. The Nice Observatory had a beautiful situation on a mountain near to the Maritime Alps, where there were particularly clear skies. It was supported partly by the French Government and partly by endowments and gifts. The telescopes and other instruments were presented by M. Bischoffsheim, a wealthy banker of Nice. The Mount Wilson Observatory had its observation station on the summit of Mount Wilson, and the headquarters were on the plain at the town of Pasadena. The Lick Observatory was established on Mount Hamilton, owing to the first-class conditions for observation there. The Flagstaff Observatory, in Arizona, was another instance, and the climatic conditions were much similar to those in Central Australia. The modern method was to get the best value out of the instruments by placing them where the best observations could be made, and where the greatest number of days and nights during the year were suitable for observing. Otherwise the instruments were lying idle, like capital without interest.

—The Instruments Required.—

Questioned with regard to the instruments needed, Mr. Dodwell said it was desirable to have the best, and of modern workmanship, like those used in many parts of Europe and America. A large number of them were gifts, or bequests from private individuals. Of the great telescopes of the world, only one at the observatories he had recently visited was not a donation, and that was at Washington. In France the great physicist, Foucault, gave a large reflector to Marseilles, because the sky there was so much clearer than at Paris. At Swarthmore, Pennsylvania, and even at the Royal Observatory, Greenwich, there were some fine instruments donated for astronomical research by private people.