

to the fact that there were observatories already established independent of the universities, so that really it was an accident that had really been the great contributing agency to the exclusion of astronomy from the university studies. He had realized when in America that its absence here constituted a great hiatus in their teaching; but when he returned the time was inopportune on account of the strain on the finances of the community. At present things were more prosperous, and there was a great movement toward the development of education. He could appeal to the Treasurer's knowledge of the subject to bear him out that there was no other branch of science that was of so great value as astronomy, or that could so appeal to the imagination or enthusiasm of students. The present cost to the State of the meteorological and astronomical departments was £1,350 a year. The former branch had been taken over by the Commonwealth, but the instruments remained, and it would be a great advantage to the Treasurer personally, and through the University to the public, if the astronomical reserve were handed over to the University. There would be no difficulty in carrying on the meteorological and astronomical work together.

—Room for Recreation.—

There were four or five acres in the West Terrace Reserve which would supply what they badly wanted at the University—recreation ground for their students.

The Treasurer—So far as sport is concerned, the Adelaide University is not residential, and there are magnificent park lands around Adelaide.

Professor Bragg—It is just because it is not residential that we are so keen on getting a sports ground.

The Treasurer—But that is apart from the scientific aspect before me.

Sir Samuel Way—The absence of residence at the University makes the camaraderie that comes through sport all the more necessary. There is a valuable piece of park lands we would like to have, but we found it was already occupied, and there is no other place available except what we might use through concession, such as the Oval. It would be a distinct advantage to have a separate ground.

—Other Speakers.—

Professor Chapman said the meteorological department was the portion of the observatory work which appealed to the general public, but the other portion was of great importance, and on it the greatest amount of money had been spent. It would be a great loss to the community if they did not make the fullest use of the instruments which were left, and of the money which had been spent in the past. The work of the Observatory would divide itself into three classes. They had, first of all, the directly practical aspect. The Observatory kept the time, which was of great value to the community. It also afforded great assistance to the Survey Department in connection with the mapping out of the State, and a very important practical outcome of that was in the fixing of the boundary of the State. Secondly the Observatory naturally took its part in general scientific discovery. It was only fitting that South Australia should take its part with the other States in the furtherance of human knowledge, particularly as they had the instruments for the work. Then the third aspect was the educational value of astronomy, which was of direct practical importance to the community. If the Observatory was under the control of the University, that feature of its work could be much better emphasized than if it were left under the control of a Government astronomer, whose object would be purely scientific research. Under the University, the man would be both an educationist and an astronomer. No subject so developed the imagination of the mind or treated with such great vastness and gave a man an idea of the very small place he occupied in the universe as astronomy. Lectures would be given by the astronomer. The astronomical authorities had given popular lectures and done what they could; but it had been a source of constant regret that there had been nothing of that sort of thing in connection with the University.

Professor Bragg said South Australia afforded unique opportunities for the study of astronomy, particularly in connection with the physics of the sun. There were only a few countries in the southern hemisphere which could deal with the problems of the heavens, whereas there were a large number in the northern hemisphere. It would be a matter of bitter disappointment to scientific people if the work was not continued. If they coupled the astronomical work with a university spirit it would be of the greatest benefit to the community.

—Reply of the Treasurer.—

The Treasurer, in reply, said astronomy had always been a subject of the greatest

interest to the British nation. Having produced a Newton, a Herschell, a Halley, and a Proctor she could take first place among the nations of the world. The Government had received a considerable amount of information on the question. For a long time the meteorological and astronomical work had been carried on together under the supervision of Sir Charles Todd. A little while ago when the Government was advised that the Federal authorities intended taking over the meteorological part of the work, and leaving the astronomical, they, as a Government, felt it to be their duty to point out to the Federal authorities that the Constitution provided not only for the taking over of the meteorological, but also for astronomical work. In fact, the astronomical was mentioned first. They had pressed that point. A report, dated December 11, 1907, stated:—"The present staff of the Observatory consists of the Government Astronomer and four assistants. Under changed conditions the staff would be lessened, and a programme of useful and necessary astronomical work could be carried out by the Government Astronomer and two competent assistants. If it is the intention of the Government to carry on the Observatory as an astronomical institution, the Government Astronomer should be on the spot, and ought therefore to have the use of the residence." He had also received the following report, dated December 26, 1907:—"On January 1 prox, the meteorological work of the State, which up to the present has been controlled by the Observatory Department, will be, as you are aware, transferred to the Commonwealth Meteorological Bureau, which department, I understand, desires to lease the Observatory dwelling and offices. Apart from the dwelling house, to which is attached the anemometer tower and a room used as a library, we have a dome in which is placed an 8-in. equatorial telescope, a building (just completed) for the accommodation of the seismograph, and self-recording barograph and thermograph instruments, and attached to the offices is the transit room, in which is a very fine meridian circle instrument. The Observatory also possesses a very good library of several thousands of volumes and pamphlets (astronomical and meteorological), presented by kindred institutions all over the world, together with books of reference. The Federal Government, in taking over the meteorological work, have no power to transfer the astronomical part of the work (he presumed that meant owing to the limitations of the particular Act), and though seismology is one of the branches of science which the new meteorological bureau proposes eventually to undertake, it is doubtful if it is prepared to do so at this stage. In the event, therefore, of the Government agreeing to lease the dwelling and offices to the Commonwealth department, it will be necessary to take steps to have the instruments properly attended to, to carry out a minimum programme of necessary astronomical work, such, for example, as the maintenance of the State time service, and to arrange for the fixing, adjusting, and control of the seismograph instrument. I would respectfully suggest, therefore, that the Federal Government be asked to permit the present transferred Observatory officers to carry on these duties, until such time as the State Government arrives at a decision with regard to the future of the Astronomical Observatory, the State to make these officers an allowance for doing the work." In respect to the request that until other arrangements should be completed, the Commonwealth officer should continue the work, they had received the following telegram from Mr. Deakin:—"Your telegram 27th. Have pleasure in agreeing to Mr. Dodwell temporary undertaking certain observatory duties pending arrangements being completed for carrying out work in future." It would be gratifying to them that there would be no blank page in the astronomical work of the State. He had also received the following statement of the astronomical work at the Observatory as formerly carried out:—"Transit Circle Telescope—Observation of clock stars, observation of azimuth stars, observation of level, observation of collimation, reducing clock stars, reducing azimuth stars, working out time from star observations, control of time ball at Semaphore, time signals to G.P.O., Port Pirie, and other places, control of sidereal clock, mean time clock, and chronometers, management of batteries and other electrical arrangements, observation of zone stars (zone 20 deg to 30 deg. south), proposed adjustment of transit circle telescope, adjustment of collimating telescopes, keeping transit circle instruments thoroughly clean and in working order. Equatorial Telescope—Use for educational purposes, observation of comets, eclipses of the sun and moon, &c., miscellaneous and occasional

work, adjustment of equatorial, keeping telescope and fittings clean and in working order. General Work—Correspondence, supply of astronomical information to the public and press, maintenance of valuable and growing library, miscellaneous, e.g., settlement of boundaries, latitudes, and longitudes, &c., seismograph, development of photographic records." That was a good, full, and useful programme. There were two questions the deputation had endeavoured to put into one. They urged that the practical work be continued, and he quite agreed as to the importance of that, whether it was done by the State or the Commonwealth. The educational or university part of the work was a new departure, and would give them more thought. There was no denying the fact that the establishment of a chair of astronomy at the University would be of great importance to students and the public generally. There were many other sciences for which chairs might be established. The only question was, who was to pay for them? In developing these schemes, should they go to the Government every time, or appeal to private munificence? Why was it the duty of the Government to found these chairs? That was the view he would have to put to his colleagues. If the Commonwealth took over the work, there would be combined astronomical work under one departmental head. That was a desirable policy. Why should they set up a separate astronomical observatory for doing work which sooner or later would be taken over by the Commonwealth? They should separate the practical part from the scheme now put forward in regard to the University. The latter might be considered on its own. It only remained to say what amount the University could put up and what amount they had a right to go to the Government for.

—State and Commonwealth.—

Sir Samuel Way said they did not know whether the Commonwealth would take over the work in one year or 20 years' time. The Federal Government when they took over the work would find it could be done more cheaply by the University than by any one else. It would be a matter of ready adjustment.

The Treasurer said he was afraid not. Their experience with the Federal Government was that it was not fond of working with the State Governments in carrying on departments. The Federal Government preferred to have separate staffs and institutions of its own.

Sir Samuel Way—There was no State in which private munificence had been responsible for so large a proportion of the endowment of university work as in South Australia. Between £150,000 and £200,000 had been supplied by private generosity. It should not be forgotten that the University had tried to lessen the burden of free education by the work it had done.

The Treasurer said in respect to the buildings, some arrangements would be necessary. The Federal people might think they were going to remain where they were, and the State might take the view that if astronomy were to be carried on by it, the buildings would be required for the purpose. He agreed in acknowledging the splendid private gifts to the University, but hoped that the stream of liberality was not going to stop. With the increased wealth of South Australia in recent years, he thought it would not even be diverted, but that when it became known that the University Council desired to take up new subjects it would find assistance from private generosity. Every member of Parliament would consider that if private assistance were going to their help, it would be a proper thing for the Government to supplement it; but it was right that private persons should start first, and that the University should go to the Government afterwards. He would put the case presented to him before his colleagues, who would give it every consideration.

Professor Bragg, in referring to what should be done by the State and what by private enterprise, said it should be understood that the University supplied a great amount of its expenditure out of its own earnings, and that in this country the State contributed less to it than in almost any community in the world. They had really a right to say that they deserved more acknowledgement from the State than was given them. The University was actually earning half its income, and its fees were very small.

Professor Chapman said it seemed that if they appointed a chair of astronomy, it would be necessary to have some sort of observatory.

Sir Samuel Way thought universities right through Australia should control the observatories. He believed the only great observatory in England not connected with a university was Greenwich.