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## THE CLAIMS OF SCIENCE.

The Congress of the Australasian Association for the Advancement of Science in Sydney, to which a good deal of our space has been devoted during the past few days, is an event capable of being regarded from several points of view. It has served in the first place to bring together the acknowledged leaders of many forms of investigation, and at the same time has afforded to men engaged in different pursuits a convenient opportunity of becoming acquainted with the general results obtained in each, and of perceiving earlier than might otherwise be possible the existence of some common ground between studies which at first sight do not appear to be connected with each other. An obvious danger to which scientific enquirers are exposed is avoided when occasions occur for releasing them from the trammels of a too narrow and too exclusive specialism. But it may be doubted whether after all such gatherings do not fulfil their most valued function when they awaken the numerous unscientific members of the educated classes to a perception of the intellectual gratifications, no less than of the possibly incalculable value of the results, which science often yields to its votaries. This last named object is of special importance to a young country where attention is necessarily devoted very largely to utilitarian pursuits, and where ignorance alike of science and of scientific methods of enquiry and of reasoning is no doubt as excusable as it is widely prevalent. For the general encouragement of science, or more properly speaking the encouragement of scientific methods of thought, the stimulus of public opinion is urgently required, and this stimulus the meetings of the Association for the Advancement of Science may do much to create.

The matter is one of vital importance to Australasia, because, as pointed out by the president, Professor Orme Masson, of Melbourne, the neglect of science by any country must be fraught with evils of incalculable gravity. Some of these have already been realised in Australasia, where the devotion of their time and labor to applied science, to the almost total exclusion of pure science, is greatly militating against the usefulness of our universities and other centres of learning, and is having the disastrous effect of driving to other fields some of the most brilliant devotees of scientific research the world has produced. The number of students who have owed to Australasia their birth or training, but have found too narrow and restricted the scope which it offers for abilities which have never been surpassed, and in some cases never equalled, would furnish a lengthy list, and the departure for other shores of these prophets of science who have due honor save in their own country represents a serious loss to this part of the world. No doubt by going elsewhere they advertise far and wide the land that has reared them, and help to show that the astonishing amount of talent produced by the scanty population of Australasia during the few decades of its existence is not limited to vocalists, instrumentalists, novelists, playwrights, or the votaries of one or other branch of athleticism. But for this advertisement we have an excessive price to pay in the reputation we are liable to earn as a country which cannot afford to keep its own geniuses or provide them with facilities for the employment of their skill. Still worse is the injury we suffer when we deprive ourselves of the opportunity afforded by their presence of solving scientific problems peculiar to ourselves in medical, industrial, and other fields. Therefore it is that we heartily endorse Professor Masson's plea that time and means may be found in our universities for the cultivation of what he calls those "interesting inutilities" which appertain to pure science. With greater attention to this matter in the past we might, as Professor Masson and Professor Laby pointed out, have kept the services of many eminent physicists who have left our universities to advance the cause of science in countries where the scope and encouragement for original research were vastly greater.

Although in theory a distinction is properly recognised between pure and applied science, universal experience affords countless instances of the merging of the one into the other, and of the folly of attempting to set a limit to what is practical in science and what is not. Some of the most conspicuous additions to the medical knowledge of the past hundred years were due to the experimental work of biologists in the laboratories, brought into operation by physicians and surgeons only when it had already reached an advanced stage of development. It was the labors of Schleiden and Schwann which established the "cell theory," that in turn led to the discoveries of Pasteur and Lister, and Rontgen was far from thinking of surgery or its requirements when in his modest laboratory at Wurzburg he undertook his research on the cathode rays of Sir William Crookes. Another example of the medical application of scientific work is furnished by the labors of the French and Italians investigators of malaria, and by their discovery that the several phases of ague corresponded with those of the development and multiplication of a parasite contained in the blood cells. But it would need more space than can be spared to exhaust the facts which in every department of human knowledge or human industry might be cited to show the value of research work undertaken in the interests of pure or abstract science and with no utilitarian object immediately in view, and to sustain the plea urged by more than one of the savants in Sydney for the enlargement of the scope of university training in Australia, so that it shall not be limited merely to the exposition of existing knowledge.

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## HIGHER EDUCATION.

Two distinct but, it may be, parallel movements are clearly discernible in the educational world. There is an increasing disposition so to graduate the steps of the academic ladder as to facilitate the ascent of all who find a place upon it to the highest rungs, if they have the necessary capacity and determination to climb. At the same time a growing desire is manifested for the establishment of greater uniformity in the standards which represent the successive stages that are reached. As an important and perhaps a guiding force, operating on both these lines, a higher appreciation of education is plainly visible in all classes of the community. In this respect something approaching to a revolution in public thought has taken place. A wide departure from former ideals is one of its results. The notion that a passable acquaintance with what were called the three R's was a sufficient equipment for the average subject of primary education has long been abandoned. It is true that no self-respecting person will now quote with approval Pope's famous line, which was once regarded as a mere truism—"A little learning is a dangerous thing." The further exhortation, "Drink deep, or taste not," is admitted to be unsound advice, and in direct contravention to the older maxim that knowledge is power. Finality in this quest is impossible, for the higher the altitude the wider is the outlook, and it would be the merest folly to urge that those who cannot attain the summit should contentedly abide on the plain. Education has to a large extent been democratised, so to speak, and the process is still going on. No longer the exclusive heritage of those who are born with the proverbial silver spoon in their mouths, education is the recognised birthright of every child. Accidents of birth have the effect of variously handicapping those who enter the race, but the modifications of educational systems have as their general effect the lessening, if not the removal, of inequalities, so that capacity and talent may have a better chance. Possibly an incidental effect has been an abnormal stimulus to education on its utilitarian side, to which Professor Orme Masson referred at the Science Congress the other day, but this is of minor consequence when compared with the mighty and sustained impetus of new ideas.

We need not travel beyond the limits of our own State to obtain abundant evidence of the profound impression which higher education is making upon our national life. A study of the continually lengthening pass-lists of the University which appear at the close of each academic year reveals the growing appreciation of it, and suggestively illustrates the place it occupies. What is going on among ourselves is happening also in other States of the Commonwealth, and when Queensland and Western Australia have Universities of their own, Australia will have a cluster of seats of learning diffusing their influence far and wide. What has already been done by the agencies now at work for the encouragement of secondary education is itself of inestimable value, and the benefit has not been limited to collegiate schools. It has ramified extensively throughout the primary system, raising its standards, animating its workers, and increasing its efficiency. One of the subjects discussed at the Science Congress was the influence of the universities on the curricula of the schools, and it is obviously inevitable that such an influence must be continually at work. Professor Carslaw, who introduced the topic, argued that the universities must have some security for the previous training of those who extend their classrooms, and pointed out that the conditions they imposed would affect the work of many who would not pursue their studies at the university. Hence it follows that the character of the last link in the educational chain will in great measure govern not only that of the next, but extend all the way along to the very beginning. Nor is this the whole. Teaching universities do much more than mould the character and develop the capabilities of individuals. From their portals a procession of men and women issues into the world to take leading positions of different kinds in the activities of the community. It was a perception of the force thus to be generated and applied that prompted the late Cecil Rhodes in his far-reaching and statesmanlike plan for a teaching University for South Africa. Towards this object it is said that £200,000 of the funds he left in trust are to be devoted, and the sum will be made up to half a million by Sir Julius Wernher and Mr. Otto Beit. With similar ideas in his mind, Sir Frederick Lugard, the Governor of Hongkong, has formulated his scheme for a University at that supremely important centre of Asiatic commerce, whence will radiate Western learning throughout the Oriental world.

Hitherto the development of higher education in the several and often widely separated parts of the British Empire has proceeded generally according to local ideas and therefore on independent lines. Dissimilarity in some measure has necessarily resulted, the undesirableness of which becomes all the greater as educational systems are linked up into a continuous scheme. Hence a project for holding a Congress of the Universities of the Empire has been set on foot and has already made excellent progress. It was dealt with at a meeting recently held at the University of London, which was attended by representatives of nearly all the universities in the United Kingdom. All but a few of them sent their Vice-Chancellors, and the meeting, which resolved itself into a home committee of the Congress, was able to proceed so far as to fix approximately the date of the gathering, and to outline a draft scheme of subjects for consideration. The time arranged is June of next year, and the suggested topics are grouped into four divisions—university organisation, universities in their relations to teachers and undergraduates, universities in their relations to post-graduates and research work, and universities in their relations to schools and other agencies for higher education. The field is purposely wide, and oversea universities are invited to send suggestions which will form the basis of an agenda. An avowed object of the gathering is to facilitate co-operation and promote uniformity in higher education throughout the Empire. The need of this in the Commonwealth is already apparent, and an Imperial federation of learning is a noble conception.