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of calcium and hydrogen in vapor had been determined by these means. During the time of a solar eclipse there were excellent opportunities for observation, and it had been computed that some of the great hydrogen flames extended fully 100,000 miles beyond the level of the solar atmosphere.

The surface of the moon was pitted and marked in a manner which had led to the formation of extraordinary theories. Huge crater-like holes, some of them 40 miles in diameter, had been the subject of endless discussion. The idea that they were receptacles for the souls of evil men no longer found favor, and they were generally thought to be the result of lunar volcanic activity, although some astronomers considered they were caused by the impact of thousands of meteorites attracted to the moon from inter stellar space.

Of the planets neither Venus nor Mercury could be examined very closely but Mars offered a great field for observation. It was smaller than the earth, and the seasonal waxing and waning of its pole caps seemed to prove that they consisted of ice and snow. The wonderful "canals" had not yet been satisfactorily photographed, and there was still a great deal of speculation concerning them. Jupiter had a diameter fully ten times that of the earth. The famous rings of Saturn discovered by Galileo had been found to consist of thousands of meteorites drawn and held by the relentless force of gravity. Far beyond the solar system extended the Milky Way, with its countless suns, probably each followed by its own planetary system, and stars set in an infinitude of space. So incomprehensibly vast was this space that it was impossible to think of it even in terms of millions of miles. They could only calculate by time, and when they knew that the light from some of these stars had taken 300 or 300 years to reach this earth they would realize how imagination must falter at the mere thought of the vast gap to be bridged.

Professor Chapman was heartily thanked at the conclusion of his address, and an animated discussion followed.

The "Milky Way" consisted of myriads of bodies similar to the sun—many of them just as large, and some, perhaps, larger. They were an incalculable distance from earth, and their light took 200 or 300 years to reach us. Therefore we did not see them as they were to-day, but as they were about three hundred years ago.

Advised 10 APR 1924

The Government, on the recommendation of the Faculty of Medicine of the Adelaide University, have appointed Dr. Harry Swift to be a member of the advisory committee of the Adelaide Hospital in place of Dr. W. T. Hayward, who retired when he left for England recently.

The Register.

ADELAIDE:
FRIDAY, APRIL 11, 1924.

A NOTABLE REPORT.

An excellent step was taken when in March, 1923, the Director of Education, Mr. W. T. McCoy, was commissioned by the Government to attend the Imperial Education Conference in London, and to visit some of the schools of Great Britain, Switzerland, Denmark, Sweden, and Canada. Mr. McCoy has now presented a report, extracts from which are published in other columns, which is a capital example of the benefits of official research into oversea systems and methods of work. The Director has come back with conclusions which may lessen the complacency with which South Australians have regarded their own educational system; but that was only to be expected. A young country, isolated from the greatest centres of the Old World and the New, must necessarily have much to learn; the great thing to be desired is that the knowledge shall stimulate to further progress. In providing specialized forms of adolescent education, in training children for agriculture and for life in the country generally, in provision for medical and dental inspection of pupils, and the training and education of mental defectives and backward children, Mr. McCoy found South Australia compared unfavourably with the leading countries visited. His recommendations sketch the lines on which these defects may be repaired. In themselves these four criticisms cut very deep into the life of any young nation. Modern psychologists are stressing the danger and deterioration arising from the neglect of the education of the adolescent, and the wasteful and cruel policy of subjecting untrained youth, at its most difficult and stressful period, to the strain of some forms of industrialism; while, from a purely economic point of view, recent history has indicated that to the nation with the best technical education, and therefore the best use of its resources, must fall the prosperity of to-morrow.

An interesting passage of the report refers to Bible reading in schools, and while the Director, by regulation bound, makes no recommendation on this subject of Government policy, he is plainly impressed by the "spirit of reverence and the wide knowledge of Scripture history" shown by the children of England, Denmark, and Sweden. From a cultural viewpoint alone, the absence of the Bible from our State school curriculum places the children at a disadvantage in relation to an appreciative study of the best English literature; while in the realms of the spirit and of moral

conduct, the elevating effects of the Bible, when properly read, have been apparent for centuries in Britain's national life. The fine system of physical education and of medical inspection carried out in Britain and other countries also won admiration. In the Mother Country 316 full-time and 2,000 part-time school doctors (including specialists for all diseases), and 3,000 school nurses are employed to attend to six million children. A comparison with Scotland is also illuminating. For 62,000 children, the Edinburgh Local Education Authority employs six full-time medical officers, six full-time nurses, six part-time dentists, two oculists, two ear and throat specialists, one radiologist, and nine part-time nurses. South Australia, with 90,000 children spread over a much greater area, entrusts this important work to one medical inspector, two nurses, and one dentist! The London County Council maintains 58 clinics for the treatment of visual defects, adenoid growths, and other such hindrances to learning.

The matter of rural schools, and particularly of agricultural schools, is of vital interest to a land of undeveloped

spaces such as Australia. The country schools of Ontario, where grants are made to encourage teachers to qualify themselves for teaching agriculture, form an impressive model. Small schools, with enrolments from 20 to 45 children, have their own garden plots for experiments and practice under trained teachers; there is cheap, standardized equipment for teaching domestic science, and also for woodwork. The agricultural boarding schools, which are the next step, offer instruction in animal husbandry, principles of breeding, stock judging, dairying, horticulture, poultry keeping, and "cultural subjects;" while girls are given courses in poultry keeping, dairying, English, and domestic science. Secondary high schools, with an agricultural basis, such as exist in Great Britain, Denmark, Sweden, Norway, and Canada, appear to offer the best means of linking up vocation and education in country districts. Dealing with rural schools generally, Mr. McCoy points out the benefits of the consolidated system, by which a district, instead of two or three small schools, with poor equipment and low-salaried teachers, may have one fine building, excellently staffed and equipped, to which children may travel daily. Mr. McCoy gives a most interesting glimpse of the People's High Schools of Denmark, Sweden, and Norway, in which young men and women from 18 to 25 take short courses in literature, history, poetry and song, civics and economics, agricultural subjects, domestic arts and domestic industries, and almost all the other branches of a liberal education. As Mr. McCoy says, it is worth considering whether there is any demand in South Australia for such schools, and, if so, whether there is sufficient public spirit to erect them. Treatment and training of mental defectives have been almost revolutionized in other countries, and all the schools Mr. McCoy visited have either special classes or special schools. Mr. McCoy ends on a note which shows him open minded and intent on progress:—"Nevertheless," he says, "we are altogether too rigid in our methods. In order to develop more originality and resource in our pupils, we must grant more freedom to our teachers and make our organization more mobile." With this object in view the curriculum and examination method are on their trial.

PUBLIC SCHOOL EDUCATION.

Mr. McCoy's Trip Abroad.

Many Important Recommendations.

Many of South Australia's public servants have been sent to the other side of the world to study modern developments in regard to different public utility. Of all the observations of these men, probably none will be read with greater interest than those of the Director of Education (Mr. W. T. McCoy), who recently returned from an official visit to Great Britain and other countries.

Mr. McCoy was absent about nine months, and the lengthy and comprehensive report of his observations which he has just presented to the Government demonstrates what splendid use he made of his time. He has also made many important recommendations, which should be of great value to the youth of South Australia.

"Waste in Time and Money."

In beginning his report, Mr. McCoy states:—"In order to give point to the suggestions which follow, it seems to be necessary to give a brief statement of the system of public education in South Australia, so far as the Education Department is concerned, and to indicate where necessary activities are incompletely developed or need strengthening or are entirely absent. If the scheme recommended in a report made by me to the Minister in January, 1920, were adopted in its entirety, and further provision for agricultural education and for the training of mental defectives and backward children were added, it would provide a system of schools that would probably meet all our needs, and that would compare favourably with those in existence in other countries. At present there is a good deal of waste in time and money and teaching power, occasioned by the attendance of children at a high school for less than three years. These do not remain a sufficient length of time to profit by the instruction in new subjects, namely, languages, mathematics, science, &c., and their interests would be better served by the establishment of central or higher primary schools (especially in Adelaide and its suburbs), with a commercial junior technical or domestic bias where instruction suitable to the locality and to the future needs of the children could be given. The commercial course would aim at preparing a pupil to enter upon the lowest walks in commercial life, and the syllabus would therefore include the study of commercial arithmetic and geography, the elements of book-keeping, commercial correspondence, business principles, &c. The junior technical course should be framed with a view to developing some technical skill and to preparing a boy for apprenticeship to a trade; the special studies should include trade arithmetic, science, geometry, mechanical drawing, and benchwork, &c. The domestic course should aim at fitting a girl to become a "homemaker" and the instruction should embrace cookery and laundry work, needlework (leading to dressmaking), home and personal hygiene, care of infants, house decoration, &c. English, civics, music, and physical culture would be taught in all of these schools as supplying knowledge and training necessary to any career. Suitable courses of study are provided for the various types of school at present in operation.

Outstanding Defects.

Our system also provides for the regular inspection of the schools the supervision of school attendance, the training and classification of teachers, the medical and dental inspection of the pupils, the physical training of the children, and the erection of school buildings through the Public Works Department. The outstanding defects in it appear to be the inadequate provision made for:—

1. The different types of education (commercial, technical, domestic, and general) beyond the primary stage.
 2. Agricultural education up to the college stage.
 3. The medical and dental inspection of pupils.
 4. The training and education of mental defectives and backward children.
- Medical Inspection.**
"Great importance," continues Mr. McCoy, "is attached to the work of medical inspection in Britain and in all the countries of Europe. In Great Britain 31 full time and 2,000 part time school doctors (including specialists for all diseases) together with 3,000 school nurses are employed to attend to the six million ch

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WONDERS OF THE UNIVERSE. THE SOLAR SYSTEM.

At the Institute, North terrace, on Wednesday evening, Professor R. W. Chapman addressed an interested gathering of members of the Astronomical Society. Photographic lantern slides of the sun, the moon, and the stars were cast on the sheet, and Professor Chapman discoursed upon the composition and behaviour of these solar bodies. He explained that the sun had once been called the "pattern of purity," as it was considered spotless. That theory has been dispelled by Galileo, and before him by the Chinese, who had discovered that it was not spotless. The diameter of the sun was something approaching 1,000,000 miles, and the sun-spots on its surface were in the nature of whirling tornadoes. A striking thing about the revolution of the sun was that it did not rotate as a solid body, but more as if it were a mass of viscous liquid. Sun-spots changed with marvellous rapidity, which showed the stormy nature of the photosphere surrounding the sun. This solar body contained iron and various other metals, of which we were acquainted on this earth, with the difference that they were in vaporous form. One of the most interesting of modern developments was the possibility of taking photographs of the sun by one particular kind of light, so that any one metal vapours required for observation might be isolated and shown up.

The Moon and the Stars.

Compared with the sun, said the lecturer, the moon was quite close to the earth—it was only about 420,000 miles away. The moon's surface was pitted and marked in a remarkable way, and there were at least two theories as to the origin of these cavities. One was that they had been formed by volcanic eruptions; but it was also authentically held that the cavities had been formed by the projection on the surface of the moon of large meteors from other solar bodies. It had been discovered that these depressions did not contain water, and that they were really only very large plains. There had been, however, volcanic action in the moon; and it had occurred in successive ages. Some of the volcanic craters were from 5,000 ft. to 15,000 ft. high, and from 40 to 50 miles in diameter.

Dealing with the planets Mars, Jupiter, and Saturn, Professor Chapman said it was possible that there might be intelligent inhabitants on the first mentioned. Jupiter was in an intensely heated condition. Saturn was remarkable, mainly for the "rings" that revolved around it, the character of which had been the subject of great contention. It was now proved that the rings were composed of meteorites, or "clouds of brickbats," as