THE SOUTH KENSINGTON SOLAR PHYSICS OBSERVATORY

THE report of the Departmental Committee on the Solar Physics Observatory, now at South Kensington, has been issued as a Parliamentary paper and an abstract is given in the London *Times*. The committee was composed of Sir T. L. Heath, assistant secretary of the treasury (chairman); Mr. F. W. Dyson, F.R.S., astronomer-royal; Dr. R. T. Glazebrook, F.R.S., director of the National Physical Laboratory, and Professor Arthur Schuster, F.R.S., chairman of the executive committee of the International Union for Solar Research, with Mr. F. G. Ogilvie, C.B., as secretary.

The terms of reference were:

To consider the alternative schemes for locating the Solar Physics Observatory at Fosterdown and at Cambridge, respectively, and to report which of the two schemes is likely to secure the best results for an annual expenditure of approximately the same amount as is now incurred for the work done under the direction of the Solar Physics Committee.

The committee discuss the question in considerable detail, and three of them—Sir T. L. Heath, Mr. Dyson and Professor Schuster—agree on the following "conclusion and recommendations":

We are of opinion that, on a balance of considerations, and especially having regard to the advantage to the progress of solar physics which may be expected to accrue from the establishment and support by the university of a real school combining the studies of solar physics and astrophysics, the Cambridge scheme is calculated to give the better results for an expenditure of approximately the amount now available for the Solar Physics Observatory.

We recommend, therefore, that the solar physics work be transferred to Cambridge, with an initial grant for buildings and a fixed annual inclusive grant-in-aid to the university, provided that the university will agree to the following conditions:

1. That the professor of astrophysics be the director of the Solar Observatory.

2. That there be a committee or syndicate nominated by the university with functions similar to those of the board of visitors of the Royal Observatory at Greenwich.

3. That the astronomer-royal and the director of the Meteorological Office be *ex officio* members of the committee or syndicate.

4. That the university undertake to carry out at the new observatory the necessary amount of routine work on the general lines indicated in paragraph 14 (*b*) and (*c*).

5. That an annual report, to include a statement of the work done, and an abstract of the accounts of the Solar Observatory showing the application of the grant-in-aid, be presented by the director to the committee or syndicate, to be by them transmitted to the Treasury.

With a view to securing the permanence of any arrangement that may now be made, the committee desire to point out the importance of attaching the directorship of the Solar Observatory, if established at Cambridge, to a professorship which is not merely of a temporary character. The university may not be in a position at present to give any definite assurance that the professorship will be renewed at the expiration of the present tenure; but we consider it highly desirable that the government should ascertain, before coming to a final decision, whether the university is willing at an early opportunity to consider favorably the establishment of a professorship of astrophysics on a permanent foundation.

Dr. Glazebrook, however, dissents with great regret from his colleagues' conclusion and recommendations. He says:

I believe that the evidence placed before the committee and the facts detailed in the report lead to the conclusion that, on a balance of all the considerations, a scheme for locating the observatory at Fosterdown . . . could be arranged at an annual cost of £3,000, with a capital outlay of £5,000, and would secure the best results.

It appears from an appendix that Sir Norman Lockyer, F.R.S., director of the Solar Physics Observatory, is not in favor of the transference to Cambridge, and recommends the Fosterdown site.

SCIENTIFIC NOTES AND NEWS

THE Jean Reynaud prize of ten thousand francs, awarded by the Paris Academy of Sciences every five years, has been bestowed this year on Professor Emile Picard, for his contributions to mathematics.

The De Morgan medal of the London Mathematical Society has been awarded to Professor Horace Lamb, F.R.S., for his researches in mathematical physics.

The Royal Scottish Geographical Society has awarded its gold medal to Mr. J. Y. Buchanan, F.R.S., for his services to geography, especially in oceanographical research.

Mr. Frederick Gowland Hopkins, M.A., F.R.S., formerly fellow and tutor, and Mr. Rowland Harry Biffen, M.A., professor of agricultural botany, have been elected honorary fellows at Emmanuel College, Cambridge.

Professor Peter Schwamb, who graduated from the Massachusetts Institute of Technology in 1878 and was appointed instructor there in 1883, being since 1901 professor of machine design, has retired from active work under the provisions of the Carnegie Foundation.

Mr. R. J. Godlee has been elected president of the Royal College of Surgeons of England, in succession to Sir Henry Butlin.

In reply to an inquiry as to the award of the Nobel prizes, Professor Svante Arrhenius has sent to *Nature* the following information: (1) *Prize for medicine:* awarded on October 21, the birthday of Dr. Alfr. Nobel, by the Carolinian Institute (faculty of medicine) in Stockholm to Dr. Allvar Gullstrand (born 1862), professor of ophthalmology in the University of Upsala, Sweden, for his investigations in physiological optics. (2) *Prize for physics:* awarded on November 7 by the Royal Academy of Sciences, Stockholm, to Dr. Willy Wien (born 1864), professor of physics at the University of Würzburg, Bavaria, for his discoveries regarding the laws of radiation. (3) *Prize for chemistry:* awarded on November 7 by the Royal Academy of Sciences, Stockholm, to Mme. Marie Curie (born 1867), professor of physics in the University of Paris (Sorbonne), for her discoveries of the chemical elements radium and polonium, and her investigations regarding their chemical properties. Mme. Curie received, together with her husband, the half of the Nobel prize for physics in 1903 for their investigations regarding the Becquerel rays. (4) *Prize for literature:* awarded on November 9 by the Royal Swedish Academy of Literature, Stockholm, to Maurice Maeterlinck (born 1862). The prize for work in the cause of peace will probably not be awarded before December 10, the day of Dr. A. Nobel's death, by the Storthing (Parliament) in Christiania, Norway.

Professor W. E. Castle, of the Bussey Institution, Harvard University, has gone on a zoological expedition to Peru, to be absent about three months. His headquarters will be at the Harvard Astronomical Observatory, Arequipa.

Dr. D. T. MacDougal and Mr. G. Sykes, of the Desert Botanical Laboratory, will visit the region between Khartoum and the Red Sea early in 1912, and later undertake some extended work in the Libyan oases. Attention will be devoted chiefly to the extension of studies on the features of desert basins upon which some work has been done in the Salton, and in the Otero basin in New Mexico. Dr. MacDougal sailed to join Mr. Sykes in England on November 23. He will lecture on "North American Deserts" before the Royal Geographical Society on December 18.

Lieut. Col. Edgar A. Mearns, U.S.A., retired, associate zoologist of the United States National Museum, who accompanied the Smithsonian expedition to Africa, under the direction of Colonel Theodore Roosevelt, will be attached as naturalist to the Childs Frick Abyssinian expedition, which shortly sails from London to make natural history collections in the Abyssinian region. The party will consist of Mr. Childs Frick, son of Mr. Henry C. Frick, Mr. Blick, a friend of the former, Dr. Mearns and a physician. It is the plan of the organizer to make as complete a collection of the animals of the Abyssinian region as possible. The birds will be prepared by Dr. Mearns for the National Museum, where they will be studied and reported on; the other animals, including big game, will be prepared by Messrs. Frick and Blick, both of whom have taken preliminary lessons in taxidermy and field prepa-

ration in order to qualify themselves as field taxidermists. Dr. Mearns recently sailed from New York on the *Mauritania* for London. From there the party will go to Aden, Arabia, on the Gulf of Aden, where they will outfit. They will then cross the Gulf of Aden and plunge directly into the wilderness.

THE Entomological Society of America offers each year at its annual meeting held during convocation week an evening lecture dealing with some phase of insect morphology or ecology of particular interest to zoologists and entomologists. This lecture will be given this year by Professor John Henry Comstock, of Cornell University, on Wednesday evening, December 27. His subject will be, "On Some Biological Features of Spiders." The lecture will be illustrated with lantern slides.

ON November 16 the New York Academy of Medicine held its anniversary meeting. The address of the evening was made by Dr. James Ewing, New York City, who took for his subject "The Medical Profession and the Public."

DR. G. STANLEY HALL, president of Clark University, delivered the address at the inauguration of Dr. George E. Myers, principal of the State Manual Training Normal School at Pittsburg, Kansas. The subject of the address was "Educational Efficiency."

PROFESSOR JOSEPH JASTROW, of the University of Wisconsin, will give a public lecture "On the Trail of the Subconscious," at the university on December 4, under the auspices of the university association for research and Phi Beta Kappa.

ON the evening of November 18 Professor W. Johannsen, of the University of Copenhagen, lectured before the Indiana Chapter of Sigma Xi and invited guests on the subject "Selection in the Light of Pure Line Work." The lecture was followed by a formal reception. The officers of the Indiana Chapter of Sigma Xi for the current year are: *President,* Dr. J. W. Beede; *vice-president,* Dr. C. E. May; *recording secretary,* Dr. Ferd. Payne; *corresponding secretary,* Miss Mary Harmon; *treasurer,* Dr. F. C. Mathers.

PROFESSOR S. A. MITCHELL, of Columbia University, has been lecturing in Philadelphia on successive Saturdays, beginning November 4 on the subject of "Astronomy." The titles of the lectures are (1) "Common Things about the Earth," (2) "The Sun—Typical Star," (3) "Evolution Revealed by the Spectroscope," (4) "The Moon, a Worn-out World," (5) "Fragments of other Worlds," (6) "Is Mars Inhabited?"

THE first lecture in the season's course of the Montreal Branch of the Archeological Institute of America was delivered in the chemistry building at McGill University, Montreal, by Harlan I. Smith, dominion archeologist, on the subject "The Archeology of Western Canada."

THE eighty-sixth Christmas course of juvenile lectures, founded at the Royal Institution in 1826 by Michael Faraday, will be delivered this year by Dr. P. Chalmers Mitchell, F.R.S., secretary of the Zoological Society, on "The Childhood of Animals."

THE Berthelot memorial lecture of the Chemical Society was delivered by Professor H. B. Dixon, F.R.S., on November 23.

THE annual Huxley memorial lecture of the Royal Anthropological Institute was delivered on November 23 by Professor F. von Luschan, whose address was on "The Early Inhabitants of Western Asia."

PROFESSOR KARL PEARSON is preparing a memoir on the life and work of the late Sir Francis Galton.

SURGEON GENERAL WALTER WYMAN, of the U. S. Public Health and Marine Hospital Service, died on November 21, aged sixty-three years.

MR. DANIEL F. DRAWBAUGH, the American inventor, has died at the age of eighty-four years.

SIR SAMUEL WILKES, an eminent London physician, author of works on pathological anatomy, died on November 8, at the age of eighty-seven years.

DR. R. D. ROBERTS, registrar of the Board of Extension of University Teaching, University of London, at one time university lec-

turer on geology at Cambridge, died on November 14, at the age of sixty years.

Among the New York State Civil service examinations on December 9 is one for bacteriologist of the Port of New York at a salary of $1,200.

The annual meeting of the Society of American Bacteriologists will be held in Washington, D. C., December 27, 28 and 29, 1911. The headquarters will be at the New Ebbitt and the sessions at the Cosmos Club. A six o'clock dinner will be given at the Cosmos Club on December 28. The president's address, by Professor F. P. Gorham, considering "Biochemical Problems in Bacteriology," will follow the dinner. The report of the Committee on Microbiological Teaching and Education will be presented after the president's address by the chairman, S. C. Prescott. The whole field will then be open for discussion. Some of the session programs are already in the hands of the secretary. Any one wishing to present a paper should write one of the individuals named below who has in charge the general topic under which the subject may fall: *Systematic Bacteriology,* Professor C. E. A. Winslow, College of the City of New York, New York; *Physiologic Bacteriology* (including antibodies), Dr. John F. Anderson, director of the Hygienic Laboratory, 25th and E Streets N. W., Washington, D. C.; *Soil Bacteriology,* Professor Jacob G. Lipman, director of the Experiment Stations, New Brunswick, N. J.; *Dairy Bacteriology,* Professor E. G. Hastings, College of Agriculture, University of Wisconsin, Madison, Wis.; *Plant Pathologic Bacteriology,* Professor F. L. Stevens, North Carolina Agricultural College, West Raleigh, N. C.; *Human and Animal Pathologic Bacteriology,* Dr. M. Dorset, chief of the Biochemic Division, Bureau of Animal Industry, Washington, D. C.

As already announced, the eighteenth International Congress of Americanists will be held in London May 27 to June 1, 1912. Members who desire to inspect Dr. W. Allen Sturge's magnificent collection of stone implements in his museum at Icklingham Hall, Suffolk, should communicate with Miss A. Breton, Royal Anthropological Institute, 50 Great Russell Street, London, W. C. A visit can be made in the day from London; Dr. Sturge will arrange for conveyance from the station.

The installation of the work of the Venice Marine Biological Station of the University of Southern California occurred on November 10. Addresses were delivered by President Bovard, Mr. Abbot Kinney, Professor Ulrey, Dean Healy and Professor Edwards. Through the generous cooperation of the Abbot Kinney Company the station has a biological reservation consisting of the Venice pier and breakwater and of one and one half miles of canals. The protected breakwater will be used by Professor Edwards for his work under the California Fish and Game Commission on the colonization of the various species of abalones and other forms and for experiments in pearl production. The canals, with water having 75 per cent. of the salinity of the contributing sea, will be devoted to acclimatization cultures. A motor sloop, the *Anton Dohrn,* has been completed for work in the neighboring region, including the islands off the coast of Southern California.

We learn from *Nature* that the council of the Royal Institute of Public Health has accepted an invitation from the chief burgomaster of Berlin to hold the congress next year in that city on July 25–28. The congress will include the following sections and presidents: state medicine, Sir T. Clifford Allbutt, K.C.B., F.R.S.; bacteriology and comparative pathology, Professor G. Sims Woodhead; child study and school hygiene, Sir James Crichton-Browne, F.R.S.; military, colonial and naval, Major Sir Ronald Ross, K.C.B., F.R.S.; and municipal engineering, architecture and town planning, Mr. P. C. Cowan. Facilities will be afforded for visiting the various public health and educational institutions in Berlin in connection with the Imperial Board of Health, the municipality and the university.

It is reported in *Nature* that in connection with the two hundredth anniversary of the

foundation of the Spalding Gentlemen's Society, in 1709, the society has recently built a home for its library and museum, which also includes a magnificent lecture theater, committee rooms, etc. The new building was opened on October 25 by Sir Henry H. Howorth, K.C.I.E., F.R.S., who referred to the extraordinary fact that a society should have carried on its work for two centuries and should then be in a position to purchase a building for its treasures. In the evening there was a public lecture on "The Romans in Lincolnshire," by Mr. T. Sheppard, in which he described many thousand relics of the Roman period, now in the museum at Hull, from a little-known site on the north Lincolnshire coast. Sir Harry Howorth occupied the chair. During the day Mr. Sheppard also gave an address on the use and value of local museums.

IN the general estimates for appropriations for the fiscal year 1912, which begins July 1, 1912, Secretary of the Interior Walter L. Fischer has recommended the following items for the Bureau of Mines: For the investigation as to the causes of mine explosions, methods of mining, especially in relation to the safety of miners, the appliances best adapted to prevent accidents, the possible improvement of conditions under which mining operations are carried on, the use of explosives and electricity, the prevention of accidents, and other inquiries and technologic investigations pertinent to the mining industry, $360,000. For the investigation, analyzing and testing of the coals, lignites and other mineral fuel substances belonging to or for the use of the United States, $135,000. For investigations into the treatment of ores and other mineral substances, with special reference to the prevention of waste in the mining and utilization of important mineral resources, $100,000. For the investigations of the coals of Alaska, with reference to their mining, transportation and utilization, $50,000.

THE total coal production of the world in 1910 was approximately 1,300,000,000 short tons, of which the United States contributed about 39 per cent. This country has far outstripped all others, and in 1910, according to the United States Geological Survey, it exceeded Great Britain, which ranks second, by over 200,000,000 tons. Great Britain's production in 1910 was less than 60 per cent. of that of the United States, and Germany's was less than half. The increase in both of these countries in 1910 over 1909 was comparatively small, whereas the increase in the United States was nearly equal to the entire production of France and was more than the total production of any foreign country except Great Britain, Germany, Austria-Hungary and France. The United States has held first place among the coal-producing countries of the world since 1899, when it surpassed Great Britain. In the 11 years since 1899 the annual output of the United States has nearly doubled, from 253,741,192 short tons to 501,596,378 tons, whereas that of Great Britain has increased only 20 per cent., from 246,506,155 short tons to 296,007,699 tons. The following table shows the coal production of the principal countries of the world in 1910, except those for which only the 1909 figures are available:

United States (1910)	501,596,378
Great Britain (1910)	296,007,699
Germany (1910)	245,043,120
Austria-Hungary (1909)	54,573,788
France (1910)	42,516,232
Belgium (1910)	26,374,986
Russia and Finland (1910)	24,967,095
Japan (1909)	16,505,418
Canada (1910)	12,796,512
China (1909)	13,227,600
India (1909)	13,294,528
New South Wales (1909)	7,862,264
Spain (1909)	4,546,713
Transvaal (1910)	4,446,477
Natal (1910)	2,572,012
New Zealand (1909)	2,140,597
Mexico (1909)	1,432,990
Holland (1909)	1,235,515
Queensland and Victoria	1,119,708
Italy (1909)	611,857
Sweden (1909)	272,056
Cape Colony (1909)	103,519
Tasmania (1909)	93,845
Other countries	5,236,903
Total	1,278,577,812

Secretary Wilson has decided that the interests of cities and towns which obtain their water from streams having their watersheds within national forests call for special measures of protection, and he has therefore developed a plan of cooperation for the Department of Agriculture with those communities which are alive to the importance of keeping their water supply pure. There are many western towns and cities, some of them of large size, which derive their water from drainage basins lying inside the national forests. One of the recognized objects of forestry is to insure the permanence and protect the purity of municipal water supplies. As the forests are maintained for the benefit of the public Secretary Wilson considers it the duty of his department to do all that it can both to prevent the pollution of such supplies and to create or maintain conditions most favorable to a constant flow of clear water. Stock raising and occupancy of the land for the various kinds of use which are ordinarily encouraged on the national forests may be highly undesirable if allowed on drainage basins which are the sources of drinking water. There is also to be considered the injury which may be done if the water is silt-laden. By protecting and improving the forest cover and by enforcing special regulations to minimize erosion and to provide for the maintenance of sanitary conditions, the government will try to safeguard the interests of the public. A form of agreement has been drawn up, providing that, when cooperation is entered into between the Secretary of Agriculture and any city desiring conservation and protection of its water supply, the secretary will not permit the use of the land involved without approval by the town or city except for the protection and care of the forests, marking, cutting and disposing of timber which the forest officers find may be removed without injury to the water supply of the city, or for the building of roads, trails, telephone lines, etc., not inconsistent with the objects of the agreement, or for rights of way acquired under acts of Congress. The secretary also agrees to require all persons employed on or occupying any of the land both to comply with the regulations governing national forests and to observe all sanitary regulations which the city may propose and the secretary approve. The agreement provides for the extension and improvement of the forests on the part of the government by seeding and planting and the best methods of silviculture and forest management, so far as the funds available will permit. The city on its side is expected to assist in the work by paying the salaries of the additional guards necessary to carry out the agreement, and in case extensive forest operations are immediately desired by the city, it would bear the major part of the cost entailed by this work.

Anti-typhoid vaccine will be supplied to Wisconsin physicians free of charge by the state hygienic laboratory at the University of Wisconsin, beginning on December 1, according to the announcement just made by Dr. M. P. Ravenel, head of the department of bacteriology at the state university and director of the laboratory. When the vaccine is ready for distribution full directions for its use will be issued, the only condition being that physicians agree to make a report of the results to the laboratory. To prevent the spread of typhoid it is recommended that where one case of typhoid fever occurs in a family, the other members be vaccinated promptly. In the distribution of the vaccine the authorities of the hygenic laboratory desire to secure the cooperation of physicians generally, and with that end in view are requesting that suggestions be made by practising physicians before the distribution begins, December 1. The decision of the director of the hygienic laboratory to furnish anti-typhoid vaccine grows out of the success which has attended its use in the United States army, where the results have been so striking that the secretary of war, acting on the advice of the surgeon general, has made anti-typhoid vaccination compulsory for all officers and enlisted men under

45 years of age. Before it was made compulsory, 17,000 officers and enlisted men had been vaccinated voluntarily. During the recent mobilization of troops in Texas, when the men were in camp for more than two months, under war conditions, only one case of typhoid resulted, that of a teamster who had not been vaccinated. This was in striking contrast to the Spanish-American war when within a period of three and one half months there were 20,738 cases with 1,580 deaths.

UNIVERSITY AND EDUCATIONAL NEWS

LARGELY through the efforts of Mrs. E. H. Harriman, a fund of $40,000 a year for five years has been provided to maintain an experimental school for the study and administration of public business. The school will be started in New York, but the scope is intended to be national. Mrs. Harriman personally consulted a number of business men, journalists, educators and public officials as to the need of providing such a training school, and their favorable replies resulted in her offer of a contribution to make possible a five years' test of such a school. Her own contribution was $40,000 for the first year and $10,000 for the succeeding years. Messrs. John D. Rockefeller, Andrew Carnegie, J. P. Morgan and others gave enough to provide for a total annual income of $40,000. The work will be carried on by the directors of the Bureau of Municipal Research.

THE statute allowing honor students in mathematics and natural science to dispense with Greek in responsions passed the Oxford congregation on November 7 by a vote of 33 to 11. It will now be submitted to convocation, the ultimate legislative authority of the university.

DR. EDMUND B. HUEY, who has for some time been making examinations of defective children and of aphasic patients at the Johns Hopkins Hospital, has been appointed lecturer on mental development in the Johns Hopkins University and assistant in psychiatry in the Phipps Clinic of the Johns Hopkins Hospital. From January to June, 1912, Dr. Huey will give, at the university, a series of weekly public lectures and clinics on the subject of backward and feeble-minded children, and on related phases of clinical psychology.

DR. ALFRED N. GOLDSMITH has been appointed instructor in physics in the College of the City of New York.

DR. ALEXANDER F. CHAMBERLAIN, hitherto assistant professor, has been promoted to a full professorship in anthropology at Clark University.

PROFESSOR R. I. SMITH, of the North Carolina College of Agriculture, has accepted a position with the Porto Rico College of Agriculture, taking up extension work in agricultural education. His address after January 1, 1912, will be Mayaguez, Porto Rico.

DISCUSSION AND CORRESPONDENCE

THE USE OF SODIUM BENZOATE AS A PRESERVATIVE OF FOOD

TO THE EDITOR OF SCIENCE: It seems proper that the following quotation of the Prussian Scientific Deputation of Medical Affairs should be published in addition to that copied by SCIENCE from an article in the *Journal of the American Medical Association,* that the American public shall not be misled:

In order to decide the question concerning the use of benzoic acid and its salts as a preservative of food, one must consider the result of the prolonged administration of these substances in small doses. Such experiments were carried out on twelve young men in the chemical laboratory of the Agricultural Department in Washington under the direction of Wiley. The persons experimented on received, in increasing quantities, between 0.5 to 2.5 grams of benzoic acid or benzoate in capsules during four periods of five days each. The majority of the persons experimented on experienced digestive and metabolic disturbances, gastric pain, vomiting and reduction in body weight, which decided Wiley to declare that the use of benzoate salts should not be allowed in the preservation of food. Since, however, doubts arose regarding the technic of these experiments and since the injury to the health of the individuals could not with certainty be attributed to the use of benzoate of soda, an American commission ap-