28: "Travels through the Mountains of Colorado, Wyoming and South Dakota," Dr. Fred J. Seaver, curator.

WE learn from the *Journal* of the American Medical Association that the University of California and Stanford University have organized a Western School of Public Health to assist health departments of western states in the training of public health personnel. Social security funds are used to finance the school and the education of certain public health workers. Health officers, public health nurses, sanitary inspectors, public health statistical technicians and public health laboratory technicians in the ten western states are eligible on recommendation of their health officers for attendance at these courses, which will be given during the summer months. The object is to train those who are already employed in health departments, provided they are considered worthy of receiving additional education. Applicants for the regular work, which may lead to a degree in public health, will be asked to meet definite matriculation requirements and must be within certain specified age limits.

Current Science states that the National Institute of Sciences of Calcutta, India, will issue each year a publication under the title "Indian Science Abstracts," the sub-title being "An Annotated Bibliography of Science in India." This publication, the first part of which appeared recently, plans to include abstracts of all scientific papers published in India, as also of papers published abroad on work done in India or based on Indian material.

ACCORDING to an Associated Press dispatch from Moscow, a new program of education in the medical sciences was announced on September 9 by the Soviet government. Measures were outlined to increase the number and to improve the training of doctors, nurses, dentists and druggists. A decree by the Communist Executive Committee provided for establishment of many new schools, including junior medical schools with three-year courses and an enrolment of 447,700 students; midwifery schools with two-year courses and capacity for 13,300 students, and nursing courses for 95,000.

THE London *Times* states that many species of bacteria and microfungi have been added to the National Collection of Type Cultures of microorganisms during the past five years, and the fourth edition of the catalogue, issued by the Medical Research Council, is enlarged to 143 pages. The extensive collection at the Forest Products Research Laboratory, Princes Risborough, of wood-destroying fungi and fungi causing discoloration in timber has been made available, as have also various filterable viruses maintained in a number of medical and research institutions. A valuable collection of yeasts and other micro-organisms of importance in the fermentation industries has been presented by the executrix of the late A. Chaston Chapman. The nomenclature of that important group of food-poisoning organisms known as Salmonella occupies nine and one half pages in the catalogue. Attention is directed by the council to the continued need for the deposition of newly described species and also for fresh examples of types at present in the collection.

Nature states that thanks to the generosity of Sir MacPherson Robertson, a new building has been completed in Melbourne for the housing of the National Herbarium collections, and the transfer of material is in progress. The building is a block, approximately 100 ft. by 80 ft., containing two floors. On the upper floor provision is made for the collections (numbering some 1,500,000 sheets) and for a library of more than 10,000 volumes. On the lower floor are a museum of economic botany, a laboratory, a lecture hall and the administrative offices. The construction is fire-proof throughout; all cabinets are of steel and the main door is guarded by fire-proof devices operating automatically when the temperature reaches a certain point. The collection was commenced about 1856 by the late Baron von Mueller, and it is intended to preserve the existing division into two sections (i) Australian and (ii) extra-Australian. The former is very complete and contains a number of type specimens. The room allotted to it is 60 ft. by 35 ft., allowing for 30 per cent. expansion, or 55 per cent. if further cabinets be installed. The extra-Australian section, which is already extensive and is continually growing by exchanges, will be housed in a room 80 ft. by 35 ft.

DISCUSSION

FROM THE CORRESPONDENCE OF OLIVER WOLCOTT GIBBS

THREE volumes of manuscript letters to and from Oliver Wolcott Gibbs (1822–1908) in the new library of the Franklin Institute in Philadelphia form a delightful and informative chapter in the long history of American science. Gibbs was in Cambridge from 1863 until he retired to Newport in 1887 to continue research. He is part of Harvard's scientific life. He was president of the National Academy from 1895 to 1900, president of the American Association for the Advancement of Science in 1897, and served on the Rumford committee of the American Academy from 1864 to 1894. His researches centered on work with

the spectroscope, thermodynamics and the complex compounds of cobalt.

The one hundred and fifty letters to his friend Ogden Nicholas Rood (1831–1902) reveal Gibbs as a helpful critic and a keen observer of the great developments of European and American science.

When Gibbs planned to leave the Free Academy in New York because of the fatiguing work there, he recommended Rood for the position with this encouragement, "Here is the finest collection of optical apparatus in America" (February 12, 1863). He was deeply interested in plans for spectroscopes and a binocular stereoscope. He followed closely Louis Rutherfurd's work on spectral apparatus, for "the photographs of the electric spark were beautiful and deeply interesting" (February 11, 1862), Gibbs wrote on March 1, 1870, "There is a good chance of getting the Rumford Medal for Mr. Rutherfurd for his improvements in [astral] photography," and made many efforts in that direction. Rood was also deeply interested in this field. Gibbs reminded him on December 8, 1863, of his promise to photograph on silvered glass "to get transparent metallic photographs" because the polished silver surface should be better for stellar photography.

His various estimates of Rood's work are of interest. In 1865 he viewed Rood's results with the photometric spectroscope as opening a new field for investigation. Four years later he wrote:

> Your experiment on the refraction of conducted heat is a most beautiful and important one and must have real value for the theories of heat and sound.

In 1874, he gave encouragement to his work on magnetism; it is "very interesting and important and you must follow it up."

Later, in 1896, another matter was to the front:

> I was much pleased at your remark that the x-rays may after all be only ultra-violet rays about which we really know next to nothing. . . . Your work on the x-rays is very interesting and very valuable.

He considered Rood's paper on the specific heats of iron, copper and aluminum as a valuable contribution to science (May 24, 1898).

Gibbs's comments on his contemporaries are enlightening. Upon discussing Schellbach's paper on the attraction and repulsion of a vibrating body, he commented: "That will clear up the theory of electricity in the end" (June 12, 1870). For him, Zollner's horizontal pendulum possessed "application endless in number" (January 31, 1874). He recognized and appreciated Josiah Willard Gibbs (1839–1903), and did much to turn the Rumford Medal to him in 1880, and hoped that the academy would not lose him, for his published papers in thermodynamics had given him a splendid reputation abroad.

Talk not of the laboratory is amusing. He wrote on October 21, 1872:

> I am much interested in Trowbridge who is one of the best . . . fellows I know. You must see more of him and I know you will like him as he possesses the true scientific spirit. I have never felt much confidence in Draper's work. [Tyndall is] an excellent and attractive popular lecturer and that is all.

He chides Rood:

> You did not do what was right by Remsen! As a true scientific man he had a right to a letter testifying to his real work as an investigator without reference to any special position or to any other candidate. . . . I shall give him a hearty endorsement if he applies to me. . . . I do not know whether Gilman has ever thought of me for the place. But if I go to Baltimore I should like extremely to have Remsen for a colleague. (April 19, 1875.)

A few weeks later he wrote:

> Of course I don't want to leave Harvard for a one-horse college, but I would make many personal sacrifices for better opportunities for scientific work than I have here.

Perhaps in some instances his judgment outside of science would raise some questions. In 1890, talking about university affairs:

> I hear Mr. Low spoken of as a business man only. I am afraid that you are to have a second edition of Eliot who will run the college like a soap factory . . . without any intellectual sympathy whatever.

But there can not be much opposition to his advice to Rood, who was about to visit the Exhibition of 1876 in Philadelphia:

> Don't waste your time on the Woman's Exhibition Building which contains a mighty mass of rubbish. . . . Don't sleep in any of the hotels near the Exhibition, they are poisoned with malaria, and do not forget the quinine.

We may follow his own work. In 1869 he was writing about a new method of making gas analyses; in 1871 he was making a telescope without lenses; in 1874 he admits that he has been anticipated by Fleming in making quantitative determinations by the spectroscope. In 1896 his interests turned to x-rays, radium and the action of an electrified surface. In 1901 he wrote on the discovery of one or two active elements.

> The more I think of the present state of our knowledge about radium, etc., the more it seems to me that we are simply dealing with matter in a greater degree of subdivision, or, more accurately speaking, in smaller atoms than any matter with which we have had to deal hitherto. (April 24, 1901.)

Prominent among his correspondents are Rood, Louis M. Rutherfurd, Joseph Henry, C. S. Sargent, B. A. Gould, S. Newcomb, A. D. Bache, Waldron Shapleigh, James Dana, E. D. Cope, S. P. Langley, A. A. Michelson, Charles Walcott and Ira Remsen.

Rood wrote in 1863, "I owe my sudden elevation [at Columbia] to you," and two years later, on receipt of knowledge of his election to the National Academy of Sciences, he continued: "This high honor comes from the same source to which I owe all my advancement, namely, from yourself. . . ."

Fortunately for the historian, some of the Gibbs correspondence during the Civil War adds much to our knowledge of the working of the Sanitary Commission and the office of Surgeon General. In 1899, we are reminded by Remsen that American science is spreading her influence, and therefore, it is vital that America should be represented at the Wiesbaden meeting of the International Scientific Congress.

Nor can we pass by without mentioning that there is recorded in these manuscripts some interesting episodes in the career of the National Academy and the Washington Academy. In this connection, it is worth while to quote from a letter written by C. S. Sargent to Gibbs in 1900:

> I will do what I can to stop [Gifford] Pinchot's election, although I do not feel sure that we can do much against the weight of the Washington influence. Pinchot is subservient to Walcott. . . . It seems to me that there should be some sort of organization or understanding among the members who do not live in Washington and who are not in Government employ. Unless this is done there is great danger that the Academy will be turned into a political machine used chiefly in obtaining appropriations for the Geological Survey, the National Museum and other Washington affairs. This certainly ought to be resisted.

But the discordant notes in these volumes are few. And it is with pleasure that we leave the reading of them, the pleasure that comes from watching a great mind unfold.

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ORDOVICIAN FOSSILS FROM LABRADOR

DURING the summer of 1934 a party of students and professors from Bowdoin College and Clark University accompanied Captain Donald Macmillan on his summer trip to the Arctic. Some of the group remained in Labrador to collect plants. On August 5 they chanced to be near the southeast end of Grenfell Tickle. There[1] one of the students, William B. Brierly, who had studied geology under me and was on the watch for specimens to bring back to the laboratory, collected a sack of fossils. Some of these were from talus; others, he is sure, he collected from ledge. Through Wyatt Malcolm, acting director of the National Museum of Canada, I am informed that "so far as we are aware fossils have not previously been found near the Atlantic end" of McLellan Strait. According to Dr. Wilson the fossils described constitute "only the second 'find' of rocks of Collingwood age in the whole of Labrador and in the Arctic Islands region, the Baffinland find being the other."

Assistance in identifying the fossils has been given by Messrs. Percy Raymond, August Foerste, Rudolph Ruedemann and Dr. Alice Wilson. The best of the material was sent to Dr. Wilson at Ottawa. Quotations from her letter of acknowledgment follow:

> The material seems to be typical Collingwood, with *Climacograptus typicalis, Leptobolus insignis* and *Ogygites canadensis*. . . . I have compared your specimens with what we have from Baffinland. They are similar, as is also the matrix. . . . Your specimens are exactly similar to anything found in many excavations right here in Ottawa.

In the material were also specimens of straight cephalopods. Their genus has not been determined. One fossil appears to represent part of the head and appendage of Eurypterus. Dr. Ruedemann has agreed with the writer in this identification. Apparently this occurrence is the first recorded of Eurypterus from the Collingwood.

The rock containing the fossils is a limestone. When struck by the hammer a strong bituminous odor is noticeable. On this account the writer requested our chemistry department to analyze the rock and Professor Jesse Bullock kindly carried out the work. No large amount of "oil" was present. The analysis is nevertheless appended, together with some of Dr. Bullock's comments.

ANALYSIS OF ROCK

CaO	39.6	per cent.
MgO	1.3	" "
FeO	0.2	" "
Al_2O_3	1.6	" "
SiO_2	16.6	" "
CO_2	32.6	" "
H_2O	7.3	" "
Oil	0.8	" "
	100.00	" "

> The oil may be completely removed from a ground portion by means of carbon tetrachloride or other fat solvent. . . . A large portion of the silica may be rendered soluble by means of hot concentrated hydrochloric acid.

[1] It is hoped to obtain from Captain Macmillan the exact latitude and longitude of the *Bowdoin's* stop. Mr. Brierly's notes are not sufficient to locate the area closely.