A second line of work of even greater present importance, which was first inaugurated by Dr. Harrison, is that known as "Tissue Culture." In 1907 (Anatomical Record, Vol. 7), he first studied the growth and development of a living developing nerve fiber. This paper was followed in 1908–14 by other important contributions in which he described in detail this new method of research and demonstrated its unique value in the study of different kinds of living cells. Dr. Harrison's pioneer work in this field has been recognized by election to honorary membership in various foreign scientific societies and by the award of the gold medal of the Australian Zoological and Botanical Society in 1914.

Marshall Albert Barber, Ph.D., expert in malaria research, U. S. Public Health Service, jointly with Robert Chambers, Ph.D., professor of microscopic anatomy, Cornell Medical College.

Dr. Barber—for his invention of the pipette method and the apparatus for its control; used for the isolation of single micro-organisms and the injection of substances into single living cells.

Dr. Chambers—for his improvements in the micro-dissection apparatus, the extension of its use to the anatomy of single cells and the determination of the physical structure of protoplasm.

The micro-dissection apparatus consists of a device for the delicate movement and control of a pipette or needle in three planes.

The apparatus is attached to the stage of a microscope and the object, which is in a hanging drop of fluid under a glass slip, is manipulated by the observer as he views the field.

The needles have diameters of 1/25400 of an inch or less. The pipettes are about 4 times as large. By their use single cells can be removed, cut, dissected—or injected with various fluids. This apparatus, and the technique which has grown up with it, permit an extension of anatomical studies to the details of living cells. Through these studies important contributions to our knowledge of the living substance—protoplasm—have been made. This apparatus has thus opened a new field for investigation.

Orville Wright.

He was a pioneer in the art of aviation; was the first to experiment with wing warping; invented the system of control used in all flying machines to-day and built a motor-driven aeroplane in which the first flight in history was made.

From 1910 to date he has been at work in designing and testing aeroplanes, automatic stabilizers, wind tunnel research and research in every line pertaining to aviation.

His inventions in the field of aviation are universally used and his contributions are primarily responsible for the great advance in this art.

GILBERT VAN INGEN (1869–1925)

PROFESSOR GILBERT VAN INGEN, since 1903 a member of the faculty of geology of Princeton University, died at his home in Princeton on July 7. He was born on July 30, 1869, at Poughkeepsie, N. Y., where his father was professor of art in Vassar College. He was of Dutch descent, both his parents having been born in Holland in families many of whose members had been gifted artists, sculptors and musicians. He received his early education in a private school in Poughkeepsie and, while still a boy, acquired from his father a dexterity in the use of the pencil and brush which was to prove of great use to him in after life.

He inherited a keen interest in art, but early developed an even deeper interest in botany and zoology, and spent much of his spare time in the fields and woods of the beautiful countryside around his native town, studying the plants and animals which he found there. When ready to enter college in 1886, he had fully decided to become a botanist and went to Cornell University to study toward that end. He was interested in all branches of natural history, however, and in his first year at Ithaca attended Professor H. S. Williams's lectures on geology and paleontology. He was so deeply impressed by Professor Williams's personality and lectures and by the interest of these subjects that he abandoned his plan of becoming a botanist and determined to devote his life to the study of stratigraphy and paleontology. He studied geology and paleontology under Professor Williams and Professor C. S. Prosser during the college years 1886–87 and 1887–88, and acted as assistant to Professor Williams in field work in the spring and summer of 1889. He was then appointed assistant geologist on the staff of the U. S. Geological Survey and spent most of the year 1890 and the early part of 1891 in a study of the subcarboniferous rocks of Missouri, under the direction of Professor Williams and Dr. G. K. Gilbert. In the fall of 1891 he returned to Cornell as assistant to Professor Williams, and when the latter went to Yale in the following year, he went with him and spent the academic year 1892–93 at that institution, studying paleontology under Professor Williams and zoology under Professor A. E. Verrill. He did not receive a degree at either Cornell or Yale, but got an excellent training in field and laboratory methods of research and valuable experience in teaching. In 1893 he went to Columbia as assistant in paleontology and remained there for eight years, being appointed curator of the geological collections in 1895. While at Columbia he did much to help Professor J. F. Kemp build up the geological and paleontological collections which are so valuable a part of the present department of geology of that university.

While in New York he served as editor of the *Transactions* of the New York Academy of Sciences and of the paleontological department of the New International Dictionary. In his summer vacations he carried on field work on the Paleozoic rocks of

eastern North America, visiting the region about St. John, New Brunswick, under the guidance of Dr. G. F. Matthew and Dr. W. D. Matthew in the summer of 1894, the shores of Lake Champlain in 1893, 1895 and 1899, the Hudson and Mohawk Valleys in 1897 and western New York in 1898. The summer of 1896 he spent in field work on the Silurian rocks of the Batesville region, Arkansas, a district which he visited again in 1905. In 1901 he joined the staff of the New York Geological Survey as assistant paleontologist, and for two years worked on Paleozoic problems in that state, notably on the Potsdam and Ordovician of the Lake Champlain region and the Silurian and Devonian of the vicinity of Kingston, in the Hudson Valley.

In 1903 Professor Van Ingen married Miss Harriet Galusha, of Rochester, New York. In the fall of that year he was called to Princeton as assistant in geology and curator of invertebrate paleontology. He remained at Princeton for the rest of his life, being made assistant professor of geology in 1908 and associate professor in 1921. The fourteen years from 1903 to the outbreak of the World War in 1917 were the most fruitful years of his life. He came to Princeton with a training and experience which, combined with his energy and enthusiasm, made him an invaluable addition to the department of geology; and he came, too, at a time when the opportunities for constructive work in the department were as great as were this energy and enthusiasm. The rapid growth of the university and the expansion of its scientific departments which took place during President Woodrow Wilson's administration required much wise constructive planning and a tremendous amount of work by the faculty. The department of geology outgrew its quarters, and plans were made for a great modern laboratory which should be ample for the department's needs for years to come. No such laboratory as this had ever been built in America. There was no model which could be copied; the building had to be planned literally from the ground up. Professor Van Ingen was appointed one of a committee of three to advise and assist the architect in drawing up plans; and to him is due in a very large measure the fact that Guyot Hall became, as it yet remains, one of the best-planned and best-equipped natural science laboratories in the world. The added facilities of the new building and the additions to the teaching staff and endowment which came with them led a large number of students to enroll in the courses in geology and paleontology and caused a notable increase in the number of graduate students specializing in those sciences. This increase in enrollment made necessary increased equipment, a large library, changes in the curriculum and increased teaching duties in both the laboratory and the field; above all, they called for an immense amount of work by the secretary of the department of geology. This work Professor Van Ingen undertook with a whole-hearted enthusiasm and an indefatigable zeal which earned for him the gratitude of the university and the affection of his colleagues and students. He was especially interested in the work of the graduate students, and gave unstintingly of his time and energy to their instruction. He took them into the field in the Paleozoic districts of New York, New Jersey and Pennsylvania at every opportunity. When he first came to Princeton he found that he could conveniently extend the field of his studies of Paleozoic stratigraphy and paleontology from New York into New Jersey, Pennsylvania and Maryland; and he combined research with the field instruction of his students in those states and New York, visiting many localities and gathering large and very valuable collection of fossils. In 1912 he organized and led an expedition to southeastern Newfoundland. The results were so gratifying that other expeditions to the same region went out under his leadership in 1913 and 1914. Many interesting problems were studied and thousands of fossils and rock specimens were collected. Four of the students who were members of the expeditions later published doctorate theses based upon this field work.

Professor Van Ingen was an ideal field instructor, and his many students cherish memories of their days in the field with him. He was no less helpful and inspiring in the laboratory, being as much interested in his students' problems as were the students themselves; and nothing that would help one of his men in his research was too arduous or inconvenient for his attention. He was an expert and enthusiastic photographer, perhaps partly because of his artistic inheritance, and the advice and assistance which he gave to his students in the preparation of the illustrations for their theses was invaluable. He liked to have his students about him, and to many of them his house was almost a second home. He was generous to a fault; and, when he believed that the interests of the university or of his students would be advanced thereby, he gave of both effort and funds without thought of the future. Some of his students remember with deep gratitude the helping hand which he extended in the hard places of their early careers.

The entrance of the United States into the World War brought new and unaccustomed duties to many members of the Princeton faculty. The university, always famous as a center of patriotism, began training prospective army officers even before hostilities began, and offered all its facilities to the government as soon as war was formally declared. The campus became an armed camp, and its professors turned

from teaching the arts of peace to instructing in the art of war. With his characteristic energy, Professor Van Ingen began preparing himself, the younger instructors and the graduate students of his department to do efficiently what it seemed most probable that they would first be called upon to do—give instruction in map-reading and interpretation to undergraduates and alumni of the university who were desirous of fitting themselves for commissions in the army. When the university actually began the training of these men, therefore, he was placed in charge of that branch of instruction. When the government asked the university to set up a school of military aeronautics for the preliminary training of candidates for commissions in the Air Service, he was chosen to be president of the academic board of the school, responsible for all the instruction given except the military drill. He organized the school and remained as its academic head until the end of the war. It was under the tremendous strain of this work that his health broke down. He suffered a nervous collapse, and later contracted a serious case of influenza, from the after-effects of which he never recovered.

B. F. HOWELL

PRINCETON UNIVERSITY

SCIENTIFIC EVENTS

THE AUSTRALIAN COMMONWEALTH SCHOOL OF ANTHROPOLOGY[1]

AFTER nearly two years' effort, the Australian National Research Council has succeeded in its project for establishing a Commonwelth School of Anthropology, to be attached to the University of Sydney. In December 1923 the Commonwealth government expressed approval of a scheme submitted to it; in the following year, however, an officer selected by the British government to advise Australia in the matter of administration of territories, reported very strongly against the proposal to use such a school for the training of officials. In consequence, government interest flagged. Renewed efforts, supported by the Australasian Association for the Advancement of Science and the universities, were made in September, and, largely as the result of a visit from Professor Elliot Smith, who brought unofficial word of warm American sympathy, the prime minister promised to provide £1,000 per annum towards the expenses of a chair. The estimated yearly requirement being £2,500, the respective states were then asked to contribute the balance of £1,500 between them on a population basis. New South Wales, Victoria, Queensland and Tasmania agreed to provide their shares, and South Australia is practically certain to fall into line; Western Australia remains uncertain. The Research Council, therefore, has now asked the senate of the University of Sydney to consider the immediate appointment of a professor and the general arrangements for the new school. In doing so, it has laid emphasis on the following points: (*a*) The main work of the chair both in teaching and research should be in the field of social anthropology rather than on the physical or anatomical side, though provision should be made for this also. (*b*) In view of the training of students for government service in Papua and the Mandated Territories, and for specialized work in the Pacific, the professor chosen should have had actual field experience. (*c*) Though the routine work of the new chair will be under the control of the University of Sydney, it is urged that a permanent advisory committee, containing representatives of the commonwealth, states and research council, should be appointed, to assist in the organization of field research.

[1] From *Nature*.

SCIENTIFIC RESEARCH UNDER THE GOVERNMENT

REPRESENTATIVES of technical and scientific bureaus of the government met in the Interior Building on June 17 to formulate plans for the conduct of scientific research in the government service. General H. C. Smither, chief coordinator of the Budget Bureau, presided. The object of these conferences is to have frank, open discussion of the problems confronting the scientific worker, to the end that better cooperation and less duplication may result. According to a report in *Industrial and Engineering Chemistry,* the government activities represented were:

Department of Agriculture
- Bureau of Chemistry, W. W. Skinner
- Fixed Nitrogen Research Laboratory, F. G. Cottrell

Department of Commerce
- Bureau of Standards, G. K. Burgess
- Bureau of Mines, D. A. Lyon

Department of the Interior
- Geological Survey, W. C. Mendenhall

Navy Department
- Bureau of Engineering, M. A. Libbey
- Bureau of Ordnance, A. C. Stott
- Bureau of Navigation, E. T. Pollock and W. C. Asserson
- Naval Research Laboratory, Paul Foley
- Bureau of Aeronautics, R. M. Parsons
- National Advisory Committee for Aeronautics, G. W. Lewis

Smithsonian Institution
- A. Wetmore

Treasury Department
- Public Health Service, H. S. Cumming and G. W. McCoy