is something that money cannot buy. The financial reward is seldom thought of. Nevertheless it is coming to be an important accompaniment.

The universities and colleges are being heavily drawn upon by commerce and industry for trained thinkers and investigators. Great private foundations must go to the universities for trained men. Governmental agencies, state and national, can not find enough trained students to meet their needs. The experiment stations and the national Department of Agriculture are constantly in need of more and better trained personnel. While salaries offered by government and state agencies are usually not as large as those paid in the industrial world there are other compensations. There is a strong and increasing demand for men trained in the various branches of agricultural science. Work of this kind in foreign fields is very attractive to many. The state universities and agricultural colleges are awake to the new needs. They are organizing their research with the cooperation and backing of the national and state governments, with a view to encouraging the promising investigator and student and to maintaining the vivifying atmosphere that the research spirit and accomplishment gives to the university. Thorough preparation not too specialized in the first two or three years is essential to future success. The basic sciences, mathematics, physics, chemistry, and biology, together with a knowledge of modern languages must be stressed with the specialized work in the selected field.

In the graduate schools the development in the next few years will doubtless be along the line of developing special research facilities in particular fields. It should be possible to find there the men, the books, the laboratories, and the equipment necessary for the most effective investigation in the particular fields stressed. This would bring about a greater interchange of students which would be good for the university as well as the student. There never has been a time when the need for agricultural research of the first order was as necessary as it is today. The growing recognition of this need and appreciation for the service that may be rendered promises well for the future. The call for prepared and devoted workers should be heeded by the best young men and women of our colleges.

A. F. WOODS
UNIVERSITY OF MARYLAND

SCIENTIFIC EVENTS

INVESTIGATION OF CARBON MONOXIDE POISONING

IN order to make accurate observations for determining and treating carbon monoxide poisoning among those employed in mines, metallurgical plants, and tunnels, a number of investigations are being conducted at the Pittsburgh Experiment Station of the United States Bureau of Mines.

Methods of collecting and preserving blood from persons affected or overcome by carbon monoxide have been investigated and developed. Blood samples were collected in various parts of the United States, forwarded to Pittsburgh, and there examined. A preliminary report has been submitted.

The following methods of analysis of blood in the presence of carbon monoxide have been studied by Bureau of Mines investigators: Haldane's picrocarmin method, tannic acid method, spectrophotometric method, and the Van Slyke gasometric method. The Haldane picrocarmin method proved to be the least desirable, being very inaccurate with low concentrations; the tannic acid method was accurate but tedious; the spectrophotometric method was accurate and rapid, but required expensive apparatus; the Van Slyke method was the most dependable, but it required a comparatively large sample, 2 to 4 c. c., for each determination. A report on these methods of analysis has been submitted.

A study of the feasibility of using in first-aid work a mixture of carbon dioxide and oxygen, first recommended by Dr. Yandell Henderson, for resuscitation of persons overcome by carbon monoxide was conducted on both dogs and men. Results indicated that in its present state of development the method is not feasible for use by first-aid men.

In the conduct of the above investigations a superior method for the selection of analysts for color work in chemistry was developed,

which it is believed can be applied to advantage in any laboratory requiring careful colorimetric determinations. Also the solubility of carbon monoxide in serum and plasma was determined, the amount of carbon monoxide dissolved in the serum proving to have little effect upon the accuracy of colorimetric determinations. The figures for the solubility of carbon monoxide in serum have also a purely scientific value in the calculation of carbon dioxide in serum and the determination of the hydrogen in concentration.

In addition to these studies on carbon monoxide Dr. Yandell Henderson and Dr. W. Haggard, as consulting physiologists to the Bureau of Mines, in work done at the Laboratory of Applied Physiology at New Haven, Conn., on the problem of the elimination of carbon monoxide from the blood after a dangerous degree of asphyxia, have determined that ventilation of the lungs could be increased from 300 to 400 per cent. by adding 6 to 10 per cent. of carbon dioxide to pure oxygen. These investigators have also shown that the effects of carbon monoxide upon the heart are not specific, but are secondary to general asphyxia and a terminal failure of respiration. Material is now available for a report showing that symptoms and effects sometimes assigned to chronic carbon monoxide poisoning are in reality due to the effects of benzol and related substances in illuminating gas. This conclusion has a direct bearing on the use of mixtures of gasoline and coal distillate in underground locomotives.

WORLD LIST OF SCIENTIFIC PERIODICALS[1]

THE Conjoint Board of Scientific Societies proposes, if sufficient support is obtained, to arrange for the issue of a world list of periodical publications which contain the results of original scientific research, and has entrusted preliminary arrangements to a committee, of which the following are members: Sir Sidney F. Harmer (chairman), Mr. F. W. Clifford, Sir Richard Gregory, Dr. P. Chalmers Mitchell, Mr. A. W. Pollard, and Professor W. W. Watts, secretary.

The list will be an octavo volume containing, in alphabetical order, the titles and places of publication of all such periodicals in existence on January 1, 1900, and of all issued after that date.

Libraries in London, Oxford, Cambridge, Edinburgh, Dublin and Aberystwyth which take in these periodicals will be indicated in the list, and, wherever possible, at least one library in the United Kingdom will be indicated for each title.

The copies will be printed on one side only to facilitate alterations and additions.

The objects of the proposed volume are: (1) To supply as nearly as possible a complete list of current scientific periodicals; (2) to indicate, where possible, at least one library where each periodical is taken; (3) to form a basis for cooperation between libraries, so that both the number of duplicates and the list of periodicals not taken in may be reduced; and (4) to enable each library to use the list for its own purposes, by placing a mark against the title of each periodical it possesses, by cutting up for a card index, etc.

The trustees of the British Museum, recognizing the importance of this work to scientific research and bibliography, have consented to allow the compilation to be undertaken by the staff of the Museum. They are unable, however, to defray the cost of printing and publication.

Although the value of a list of this kind to libraries and scientific societies would be very great, it is scarcely possible that the production of so costly a work would be entertained by a publishing firm as an ordinary commercial enterprise. If, however, a sufficient number of libraries and institutions agree in advance to purchase one or more copies, when issued, the compilation of the list will be put in hand at once. Already a large bulk of material has been collected in the British Museum by various societies and by the Conjoint Board.

I shall be glad to receive by January 31, if possible, the names and addresses of institutions or individuals who will support this proposal by undertaking to subscribe for one or more copies of the list. The price per copy will be 2*l.* 2*s.* net.

W. W. WATTS
CONJOINT BOARD OF SCIENTIFIC SOCIETIES,
BURLINGTON HOUSE, LONDON, W. 1

[1] From *Nature*.