

REPORT ON THE ACTIVITIES OF THE LABORATORY OF
APPLIED PHYSIOLOGY -- 1920-1921

Changes in Personnel

In December, 1920, Dr. C. K. Reiman, who had been doing the chemical work of the laboratory, accepted a research position with Arthur D. Little, Inc. His place was taken in February by Mr. Philip Drinker. In connection with the new lead work Drs. J. C. Aub, J. A. Key, and L. T. Fairhall entered the laboratory staff. As voluntary workers or research assistants with and without salary, the laboratory has had the services of the following during the past year:

Francis W. Peabody, M.D.
Herrmann L. Blumgart, M.D.
Seth M. Fitchet, M.D.
Walker C. Swift, M.D.
Katherine R. Drinker, M.D.
Henry S. Forbes, M.D.
Henry P. Carr, M.D.
Edna H. Tompkins, A.B.

Research Activities

1. Dr. C. K. Drinker, Mr. L. A. Shaw, Dr. H. P. Carr, Dr. K. R. Drinker, and Miss Edna H. Tompkins continued studies upon the initial distribution and rates of migration of different insoluble particulate compounds of manganese, the ultimate aim being to determine how far the physical and chemical characteristics of these compounds could be correlated with their behaviour in the animal. Such information

is essential to the understanding and prevention of harm done by different dusts.

2. Dr. C. K. Drinker and Dr. K. R. Drinker extended and finished a series of studies begun in 1915 upon the circulation in bones.

3. Dr. C. K. Drinker, Dr. Francis W. Peabody and Dr. Herrmann Blumgart organized and carried through experiments to show the effect of increasing the blood in the lung upon the air space. These experiments throw much light on one cause of the reduction in vital capacity which is observed in certain heart cases.

4. Dr. Wallace O. Fenn continued his work on the reactions of leucocytes isolated from the peritoneal cavity of the rat upon different types of particulate material. He has demonstrated quite positively that carbon particles are ingested from three to four times as readily as those of silica, and has thus suggested the first step in our understanding of the action of these substances in failing to produce or producing pulmonary fibrosis. Dr. Fenn has recently extended these studies to phagocytes secured directly from the lung.

5. Mr. Philip Drinker and Mr. Robert M. Thomson, as the first part of work upon brass poisoning, have devised new apparatus for determining the particulate content of air.

6. Dr. H. S. Forbes, in collaboration with Dr. Stanley Cobb of the Department of Neuropathology, has experiments in progress upon the effects of illuminating gas upon cerebro-

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spinal fluid pressure with especial reference to the development of headaches.

Teaching

The usual course in Applied Physiology was given to such Industrial Hygiene students as appeared. In the spring a new and much broader course was projected. This has proved attractive to Fourth-Year medical students, 26 men having elected it for the current year. Three students were given special work in air and dust analysis by Mr. Philip Drinker.

Dr. C. K. Drinker, Dr. W. O. Fenn, and Mr. L. A. Shaw have assisted actively in the teaching of the First-Year students in Physiology, the first by giving certain lectures, the last two by supervising the mammalian experiments and giving the demonstrations.

Special Projects

The laboratory has continued former favorable relations with the New Jersey Zinc Company and supervises the preventive work on manganese poisoning carried out by the company. The work of Mr. Philip Drinker on Brass Poisoning is financed by a grant of \$5000 from this company.

The Lead Institute has contributed \$51,000 for broad studies upon Lead Poisoning. This work is under the general supervision of Dr. J. C. Aub and a group of associates consisting of Drs. Fairbank and Key and Miss Minot, Mrs. Frankfurter, and Miss Smith. Dr. Arthur B. Lamb of the chemical

staff in Cambridge is also in co-operation. While this work began officially during the past summer and will not be reported upon for another year, gratifying results in the development of a method for lead analysis have already been obtained.

October 24, 1921.

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