addition, a committee representing the institute and Swan's native town is appealing for a sum of £5,000 with which to found National Swan Memorial Scholarships in electrical engineering science. The fund will be administered by the Institution of Electrical Engineers, the interest being devoted to the payment of the scholarships.

RECENT DEATHS

DR. NORMAN BRUCE CARSON, professor emeritus of surgery in the Washington University Medical School, died on August 9 at the age of eighty-six years.

DR. JOHN S. FULTON, formerly director of the Maryland State Department of Health, died on August 12. He was seventy-two years old.

SAMUEL TOBIAS WAGNER, consulting engineer of the Reading Railway Company and professor of engineering at the Wagner Free Institute of Science, died on August 7 at the age of seventy years.

MISS SARAH G. FOOTE SHELDON, for over twenty-five years a volunteer full-time assistant to the late J. H. Paarmann, curator of the Davenport Academy of Sciences, now the Davenport Public Museum, died on July 2 at the age of about seventy-five years.

DR. WALTER E. DIXON, reader in pharmacology at the University of Cambridge, previously professor at King's College, University of London, fellow of the Royal Society since 1911, died at Cambridge on August 16.

PROFESSOR RICHARD WETTSTEIN, of the University of Vienna, director of the Vienna Botanical Gardens, died on August 10 at his estate, Triene, in the Tyrol. He was sixty-seven years old.

A REUTER message reports the death at Montreux of Professor Auguste Forel, who retired from the chair of psychiatry at the University of Zürich in 1897. He was the author of the "Social World of Ants."

SCIENTIFIC EVENTS

MEDIUMS FOR THE ISOLATION AND CULTIVATION OF BACTERIA IN THE FILTERABLE STATE

THE Northwestern University Medical School has issued a bulletin by Dr. Arthur I. Kendall, professor of research bacteriology, giving full details for the preparation of K medium for the isolation and cultivation of bacteria in the filterable state.

In the James A. Patten lecture, given on July 22 and printed in the issue of SCIENCE for August 7, Dr. Kendall made the first announcement of the discovery of a new method for the isolation of bacteria which hitherto have remained invisible. This was the development of a culture medium, which will change bacteria from invisible to visible form.

In the new bulletin issued on August 9, Dr. Kendall describes in detail how the K mediums are made from the tissue of the animal or human body. Intestine has been used chiefly for this purpose, although Dr. Kendall states that brain, liver, kidney, spleen and heart have been used. "Hog intestine," he writes, "has been distinctly more suitable than rabbit intestine and rabbit intestine has appeared to be more favorable than dog intestine. Human intestine which was not available when early studies were made is under investigation at present."

After full details of the preparation of the mediums and commenting upon aspects of their use, Dr. Kendall gives the following conclusions:

The K mediums, protein rich and peptone poor, have afforded a direct method of approach to the purview of three highly important aspects of bacteriology which are mutually related and dependent:

First (theoretical), it appears to be a biological fact that many bacteria can, and do, exist in two states, filterable and non-filterable.

Second (clinical), bacteria may be isolated from the blood stream of patients suffering from diseases that have hitherto proved difficult or refractory to cultivation.

Third (intrinsic), homologous bacteria may be cultivated both from bacteriophage and from Besredka antivirus.

From the biological point of view, this demonstration of the filterable and non-filterable states of microbic existence not only opens new fields for exploration, it also offers reasonable explanations for many hitherto suspected, but unconfirmed phenomena of microbic activity. Thus, bacteria growing in K medium from stock cultures, thereby undergoing change from non-filterable to the filterable state, not only are separable by filtration into those not cultivable in ordinary mediums (the filterable forms) but also tend to differentiate rather readily into "smooth" and "rough" types (the non-filterable forms), which may be separated by plating directly upon agar mediums. Also, the filterable forms, recultivated upon agar, often may be separated into "smooth" and "rough" types.

Chemical studies already under way suggest that the respective activities of these filterable and non-filterable forms are quantitatively and possibly qualitatively unlike. It may be stated also that the first editions of non-filterable forms obtained upon agar are, or may be, materially less reactive than the fully acclimatized, non-filterable forms gained by repeated transfer.

Finally, perhaps the most transpicuous argument at