opposed to immeasurable pains of birth! And to make mathematical philosophy appear as a dire necessity rather than a thing to be chosen for its own sake.[3] And then to urge[4] with that lover of paradox, Gilbert Chesterton, that the serious spiritual and philosophic objection to steam shovels is not that men work at them and pay for them and make them very ugly, nor even that men are killed by them, but merely that men do not play at them! Imagine a group of sportsmen cavorting over a ten-thousand acre field tossing and catching a Brobdignagian ball in steam shovels! Is it conceivable that the one objection to the steam shovel might have been eventually overcome if the Great War had not come upon us?

The greatest danger of our time is the confusion of boundaries between thing-philosophy and human-philosophy, between the philosophy of material conquest and power and that intimate philosophy of comfort which makes life not easy but worth while. When these boundaries are rectified there will be a philosophy of steam shovels recognized and used as such, and another philosophy of living; and the most laughable spectacle in the world will have passed by forever, namely, the Bergson type of philosopher with his following flock of men and women captivated by humbug in the name of an easy, capital-letter science raised heaven-high above all dirt and slime!

W. S. Franklin,
Barry MacNutt

THE VALUE OF THE SANITARY SURVEY

It would seem unnecessary to again dwell upon the old topic that analytical examinations, whether chemical or bacteriological or both, utterly fail in a large number of cases to supply sufficient data whereon to build an opinion as to the sanitary value of a water; but the old belief is deep-seated and dies hard. From time to time therefore it appears necessary to call attention to the fact that, however valuable the information gained in the laboratory may be, a thorough personal knowledge of the conditions surrounding the source whence the water comes and the method used for taking the sample entirely outweigh the analytical data.

Take an instance: Mr. N. S. Hill had reported to him the presence of *B. Coli* in water from flowing artesian wells, over which wells he had jurisdiction; and he was naturally not a little pained and mystified because of the character of such report, the accuracy of which was beyond dispute. The water rose under pressure sufficient to carry it fifteen or twenty feet above the ground surface and it thence fell in open streams into the funnel-shaped ends of vertical pipes connected directly with the supply main. Deep waters may contain bacteria, especially chromogenic varieties, and even pathogenic forms may occur therein because of unsuspected channel ways in the rock; but under the conditions obtaining in this instance the adverse report of the examiner was unlooked for and Mr. Hill's surprise was fully warranted.

Upon carefully conducted inspection it was observed that at certain times of the day the rims of the above-mentioned funnel-shaped pipe terminals were lined with sparrows that roosted, as often as not, with heads pointed outward.

Another case of pollution due to birds had a more serious ending. The contractor was confident of the purity of the water he had engaged to supply and rested his case upon the report of a bacteriologist selected by both parties. The report was adverse to the fitness of the water and caused financial failure of the contractor. When it was too late to rectify the error it was discovered that the small basin which caught the water as delivered from the ground had served as a roosting place for birds and from that basin, rather than from the falling stream, the sample had been taken.

During a legal inquiry concerning what could or could not be done by the addition of alum to a city water-supply, much discussion

[3] This we have tried to do in our "Introduction to Mechanics."

[4] See preface to Franklin and MacNutt's "Elements of Electricity and Magnetism," The Macmillan Co., 1908.

was had over the disadvantage or otherwise of using the chemical and considerable excitement followed its detection at the city faucets. Material doubt was afterwards thrown upon the accuracy of the determination and upon what may be termed "prophetic taste" when it was noted that the presence of alum had been detected some four days before it was added to the raw water.

A large town was desperately in need of water and an excellent ground supply was located. The health officer, a physician who was not in favor of the proposed plan, sampled the water, carried the sample under his buggy seat during his professional visits in the country and in the course of a day or two forwarded it, by express, without ice packing, to the central authorities who condemned it upon the strength of the high count of bacteria without having ever visited the well.

An outbreak of typhoid fever manifestly due to transmission by flies occurred in a city during a period when certain repairs were being made to the conduit leading from the source of the public water. Outside authorities to whom the situation was referred reported the outbreak of disease as probably caused by the entrance of the repair gang into the tunnel carrying the municipal supply. A visit to the spot would have convinced the writers of the report of the impossibility of getting the said gang into the twenty-inch cast-iron pipe.

The duties of the water examiner, however, do not always limit him to use the sanitary survey to save a good water from unfair condemnation. Quite otherwise. A water of entirely satisfactory character judged from the laboratory standpoint may be rated as undesirable upon inspection of local conditions because of proposed changes in the immediate vicinity of the source.

A spring water of high quality was condemned because arrangements had been made to construct a sewer above the spring and near it. The engineer in charge was to construct a "tight sewer," but who could guarantee that it would stay tight? A glance at the tables showing the leakage of ground water into sewers should shake one's faith in the permanence of such "tightness," and sewers not tight can allow of leakage out as well as in.

Damage to water through "new construction" is very fruitful of adverse and unfair reports. Springs of unassailable purity become temporarily injured (solely from the laboratory standpoint) because of "developments" made with a view to improve the surroundings. New wells and recently "improved" springs will furnish waters likely to be condemned by laboratory standards and samples of their waters should therefore not be submitted for examination.

Finally, while it is admitted that laboratory methods of water analysis have made great strides towards perfection during recent years, they can never hope to reach such perfection as to enable the analyst to uniformly rest upon chemistry and bacteriology alone, without aid from the actual sanitary survey, and they can still less be depended upon to furnish information not on what a water is, but on what it is likely to become.

W. P. MASON

TROY, N. Y.,
September 25, 1916

THE CONVOCATION-WEEK MEETINGS OF SCIENTIFIC SOCIETIES

THE American Association for the Advancement of Science and the national scientific societies named below will meet at New York City, during convocation week, beginning on Tuesday, December 26, 1916:

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.—President, Charles R. Van Hise, president of the University of Wisconsin; retiring president, Dr. W. W. Campbell, director of the Lick Observatory; permanent secretary, Dr. L. O. Howard, Smithsonian Institution, Washington, D. C.; general secretary, Professor W. E. Henderson, Ohio State University; secretary of the council, Dr. C. Stuart Gager, Brooklyn Botanical Garden.

Section A—Mathematics and Astronomy.—Vice-president, Professor L. P. Eisenhart, Princeton University; secretary, F. R. Moulton, University of Chicago, Chicago, Ill.

Section B—Physics.—Vice-president, Professor H. A. Bumstead, Yale University; secretary, Dr.