

THE YEAR'S PROGRESS IN PUBLIC HEALTH AND MEDICINE

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When you listen to a report on the progress of public health and medicine given before a meeting of this character and made by myself, you expect to hear more about progress in preventive medicine than you do about the second subject. My excuse for slighting medicine in favor of preventive medicine is that I am more interested in public health.

SCARLET FEVER

Two fundamental, scientific facts have been known for some time. The first was that some one or more of the streptococci were concerned in the symptomatology of scarlet fever. As to the causative relations of the streptococcus there were two schools. One held that this streptococcus was the cause of the disease. The other held that streptococci were so nearly ubiquitous and caused so many diseases that they could not be the specific cause of scarlet fever. This school held that the specific cause was some unknown organism, but that the streptococci contributed materially to the symptoms. The theory upheld by Bristol that the rash of scarlet fever was an anaphylactic phenomenon for which streptococci was the bacterial cause, lent more support to this side of the question than it did to others.

Dr. Dochez, by the use of certain culture methods, demonstrated the one variety of streptococcus which he claimed could produce the disease, and in that way seemed to establish the primacy of the streptococcus as the etiologic agent and, at the same time, to answer the point made by Jochmann that an organism which was so widespread and caused so many diseases could not be the specific cause of scarlet fever.

Doctors George F. and Gladys H. Dick proved that a certain strain of streptococcus grown from the throats of persons having scarlet fever, when injected into susceptible human beings, produced a disease with the symptoms of scarlet fever. They extracted a toxin from this

streptococcus which they used to make skin tests for susceptibility to scarlet fever. The Dick test for scarlet fever appears to take its place alongside the Schick test for susceptibility to diphtheria.

The specificity of this streptococcus for scarlet fever seems established. The use of serum from recent convalescents as a cure for and preventive of scarlet fever was of academic, rather than practical interest. Dr. Dochez used horses to make an antitoxin. His method consisted in injecting agar culture media under the skin of the horse and then innoculating the agar pad in the subcutaneous tissue with the streptococcus. He got a horse serum containing antitoxin in curative doses on a practical basis. Drs. Dick injected horses with toxin from their coccus. They got a horse serum containing antitoxin in weak strengths. They concentrated the serum, getting a serum which seemed curative in 10 c. c. doses. Dr. Blake reported blanching of the eruption and therapeutic cure of the other symptoms of scarlet fever. At the present moment the therapeutic power of the Dick antitoxin is being tried.

With a method of bacteriologic diagnosis established, the Dick test proven and a curative serum and preventive about ready for wide clinical use, it may fairly be said that the fundamental problems presented by scarlet fever have been solved.

MEASLES

Proof accumulates that the measles organism is present in the blood stream in the earlier stages of the disease. The blood serum of persons recently convalescent from the disease produces a relatively short lived, passive immunity when injected subcutaneously. So many confirmations of this observation have been reported that we may say the fact has been established.

The New York City health department has endeavored to collect and keep on hand a stock of this immunizing serum for use in situations to which it is adapted. Recognizing the difficulty in obtaining blood serum from human donors recently convalescent from measles, they have been paying the donors for a serum.

Recognizing the weakness of the passive immunity produced by the injection of serum from convalescents and its short duration, certain French physicians follow the injection of the serum from convalescents two days later with an injection of a filtrate containing the active cause of measles. In this way they claim to produce an active as well as a passive immunity without any considerable illness. The induced immunity, it is claimed, is more potent and endures longer. The observations have not been verified.

The artificial production of immunity against measles has not made much headway in general health department practice, nor will it until some large donor animal replaces human beings as the source of supply of vaccine.

PNEUMONIA

The year 1923-24 witnessed a very great increase in interest in the control of pneumonia. This interest is shown by elaborate and extensive investigations of the disease by the Pittsburg and the Chicago Health departments. As yet, neither has reported. The Chicago Health department will gather data until September 30, and they will begin reporting before Christmas. But the very fact that the communities are manifesting their interest by studies is an advance.

VENEREAL DISEASES

The State of Illinois and the city of Chicago have taken some advance steps in the control of venereal disease during the year. From the administrative standpoint, the adoption of:

(1) Rules and regulations for the control of venereal disease;

(2) Standards of infectivity;

(3) Standard Laboratory Methods;

(4) Standard Clinic methods;

represents a gain. These rules and methods are in operation.

There is frequent complaint of lack of definiteness and detail in health ordinances, orders and rules. The courts have not infrequently criticised such laws on this ground.

The control of venereal diseases in civilian communities in peace times is under the necessity, for the first time, of establishing a firm place in the law as determined by court decisions. Thanks to the definiteness of procedure and conformity to legal requirements of these rules and regulations and standard methods, the Illinois and Chicago Health departments are helping to put the control of these diseases on firm, legal ground.

The method of curing obstinate, chronic, gonococcal infections by the use of diathermy has gained some ground.

SYPHILIS OF THE NERVOUS SYSTEM

The low penetrability of the central nervous system of the newer arsenicals used in the treatment of syphilis has been noted for some time. There are those who hold that the modern, intensive treatment of syphilis results in a higher rate of nerve syphilis than prevailed prior to its use. There is no data on which this question can be settled either pro or con.

Those who claim that there is an increase in nerve syphilis explain the increase on the theory that the membranes and other defensive agencies of the central nervous system react poorly in protecting the nervous tissue against treponema; that early comprehensive treatment prevents these tissues from acquiring power to protect against treponema; therefore, when once this organism gets into the nervous tissues, it is not easily destroyed.

Dr. W. H. Brown and others at the Rockefeller Institute offer tryparsemid as an anti-syphilitic agent with greater power to penetrate the central nervous system. Various reports on the efficacy of this agent have been made. Dr. C. F. Read made the latest of these to you today. The United States Public Health Service published several reports on the penetrability of the central nervous system by various arsenic preparations. Among those with high penetrability, in addition to tryparsemid, is sulpharsphenamine.

INSULIN

The discovery of insulin antedates 1923-24. Insulin is a pancreatic product which represents that part of the

secretion which has to do with metabolism. It is pancreatic secretion from which the digestive agents have been removed. I need scarcely say to this very intelligent audience that it is, in a certain sense, a cure for diabetes.

During the past year, progress in insulin experimentation and therapy has gone forward in two directions. First, there has been a considerably promotional effect—philanthropic, professional and commercial—to bring insulin into more general use. Second, much experience—clinical and experimental—tending to show the place of insulin in therapeutics, has been accumulated.

This experience shows that insulin is a remedy for emergencies. Given to a patient in coma, or suffering from acidosis, or in straits from diabetes, it acts like magic. For patients making the long pull—the day in and day out battle to hold diabetes in check and succeeding fairly satisfactorily—it is not indicated.

It appears that it may find a place in the treatment of other metabolic disorders, some of which have not been suspected of having any relation to disease in the pancreas, or to the functioning of that organ.

It is noted that the diabetes morbidity and mortality rates are both apparently on the increase, and the increase has been at its maximum since the use of insulin became somewhat general. The diabetes death rate in 1920 was 16.1; in 1921 it was 16.8. To the experienced person this merely means that the publicity given diabetes and its treatment by insulin has uncovered cases and deaths due to diabetes which would have been overlooked otherwise. The same phenomenon was noticed with consumption, diphtheria, malaria, syphilis and other diseases.

GOITRE

The term is used to denote increase in size or in functional activity of the thyroid gland. Prior to 1923, the prevalence of goitre in the United States, the variation in that prevalence in different sections of the country, and the parallel variation in the amount of iodine in the water of different sections of the country, has been established. 1923-1924 has been characterized by an ex-

tension of information and of the application of known facts to treatment and prevention.

That deficiency of iodine in the human body is the principal cause of goitre may be considered to be established. That the supply in the iodine reservoir is frequently deficient because the amount supplied thereto by the drinking water and other foods is insufficient, is accepted.

The reservoir supply may be exhausted by reason of rapid growth in childhood and particularly during pubescence and adolescence, by reason of the demands of the system during pregnancy and during certain infections such as tonsillitis and pharyngitis and by reason of several emotional shocks and strains.

The active principle of the thyroid secretion, a body having great powers over all physiological processes requiring iodine thyroxin, was discovered by an American, Kendall, several years ago. It is interesting that insulin from the pancreas, thyroxin from the thyroid, and epinephrin from the adrenal are all American discoveries.

The year 1923-24 witnessed a great extension of popular interest in goitre. A fair number of American cities report goitre surveys of children in the public schools. In a fair number of places, iodine in some form is given children in schools. This is sometimes given as iodide of soda, sometimes as iodine in the table salt. In Rochester, New York, and Sault St. Marie, Michigan, iodine is being added to the public water supply. In Switzerland, where supplying iodine is more of a government function than it has been in this country, giving iodine in salt has been in vogue.

Plummer has endeavored during the year to differentiate various types of goitre and the effect of giving iodine on each. There has been the beginning of an effort to distinguish between the different types of thyroid abnormality and to determine which will get well spontaneously; which tend to progress toward more serious consequences which are benefited by iodine and which are, or may be, harmed by it.

The tendency is definitely away from classifying all cases of thyroid enlargement as goitre in need of iodine and all cases without such enlargement as being without that need.

CANCER

Statistics show that the death rate from cancer is increasing. This increase is greater than the increase in population forty years and over. Part of this apparent increase is due to greater dependability of the diagnosis as given on the death certificate, and a part of that improvement is due to public education on the cancer question. It has happened with cancer, as with other diseases, that interesting the public in the disease has shown a primary apparent increase in its prevalence. In spite of this apparent loss of ground in cancer, the year 1923-24 witnessed some gains in the fight against the disease.

Operations for cancer have gained ground in that they have been done earlier and, therefore, offer a greater likelihood of permanent cure. The people and the general practitioners are diagnosing cancer in its earlier stages and some of the cases come for operation while just developing. The need of making the diagnosis before pain appears as a symptom is coming to be fairly well known. The use of radiation by radium or X-rays, or both, before and after surgical procedures, has become more general.

The evidence is increasing that cancer of many internal organs, as well as of most surface structures, can be removed with a good possibility that at the end of a five year period there will have been no recurrence.

But the valuable work of the year in cancer consists in foundation work done in research laboratories and in the field of vital statistics. These relate to such subjects as the inheritability of cancer; the inheritance laws of cancer; the tendency of cancer to appear at certain age levels; the tendency of inherited cancers to appear in certain organs; the chemistry of cancer cells; the biology of cancer cells; the effect of different kinds of radiation on the biology and chemistry of cancer cells.

Valuable research work has been done on the chemical and physical irritants which lay the foundations for cancer or which directly cause the disease.

In a very recent paper, Hoffman says: "It may properly be said, however, without fear of successful contradiction, that concerning no other disease is a larger body of facts and observations available for qualified consideration.

"It is my deliberate judgment, arrived at after mature reflection, that it is a fundamental error to seek or to hope to find a single cause responsible for the frequent and increasing occurrence of malignant growths in the human body. It seems likewise an error to look upon cancer as an entity, for the disease, both in its origin and development, varies quite considerably as it affects the different tissues."

Dr. Hoffman then discusses the many contributing causes which may be related to cancer, placing especial emphasis on overeating, too frequent eating, constipation, the refinements of civilization, changes in food, and various irritations and local poisonings.

CARBON MONOXIDE POISONING

The importance of carbon monoxide poisoning has been stressed during the year by Dr. E. R. Hayhurst of Ohio. A very considerable number of fatalities due to carbon monoxide from domestic use of gas stoves, ordinary stoves, and from automobiles, caused the introduction of proposed laws regulating stoves and stove connections to be introduced in the Ohio legislature. These proposed laws did not pass, but they were the forerunners of legislation which will pass either in that legislative body or in others.

Dr. Randall Henderson and others investigating as a basis for advising as to the ventilation required for the New York vehicular tunnel under North River reported informingly on the proportion of carbon monoxide in the air in the wake of automobiles. He also contributed valuable information on the advantage of adding a small proportion of carbonic dioxide to the oxygen used to resuscitate persons overcome by carbon monoxide.

The United States Bureau of Mines published methods for the quantitative determination of carbon monoxide in blood as well as in air.

ETHYLCHLORIDE

Anaesthesia by means of ethylchloride has had additional trial during the year. The use of calcium and parathyroid preparations in various spasmodic disorders has made some headway.

The year has witnessed progress in the study of sunlight and other forms of light and their application in the treatment of rickets and other diseases.