bacterial infections, and particularly the epidemic influenzal pneumonia which swept through our troops during the period when gas casualties were most numerous. Because of these complexities, many of the human cases presented a difficult problem for the pathologist, and it was not very easy for him to apply fully the knowledge gained from animal experimentation. For example, although blue cross shells containing diphenylchlorarsine were used in profusion against our troops in the later months of the war, and although animal experiments had shown this and related arsine compounds to possess a high degree of toxicity, not a single casualty amongst 576 recorded autopsies could be referred to organic arsine-halogen compounds alone, nor was it possible to differentiate the lesions from those of other vesicant and irritant gases in common use.

Such considerations should not detract from the value of the work. These studies, and the equally painstaking and complete experimental work of Warthin and Weller on Mustard Gas, are fundamental contributions to the pathology of the toxic gases used in the war.

Appended to the purely descriptive studies of gas lesions of various types, is an interesting chapter given to the subject of intratracheal therapy. It was found that dogs will tolerate intrapulmonary irrigation with physiological salt solution in amounts up to three liters, or more, when the fluid is introduced over a period of thirty minutes. Resorption from the lungs takes place very rapidly as could be shown by the elimination of phenolsulphonthalein in the urine; and no serious functional or anatomical disturbances are produced. This raises the question as to how far the œdema itself is responsible for the fatal outcome in cases of acute poisoning with the suffocant gases, and suggests that other factors, such as the increased viscosity of the blood, the obstruction to the pulmonary circulation, and the resultant cardiac weakness, may be of greater moment than the mere accumulation of fluid in the air spaces.

The demonstration that inert granular material and even bacteria can in great measure be washed out of the lungs, opens new possibilities of experimental research along therapeutic lines.

Alwin M. Pappenheimer
Columbia University

SPECIAL ARTICLES

THE TAKE-ALL DISEASE OF WHEAT IN NEW YORK STATE

For nearly two decades plant pathologists have been interested in the possible introduction of the take-all disease of wheat into America. A detailed historical and bibliographic treatment of this and some related diseases of wheat has recently been published by Stevens.[1] Conditions, believed to be due to take-all, have been reported from Oregon in 1902 and more recently (1919) from Illinois and from Virginia. However, the fungus *Ophiobolus graminis* Sacc. has not yet been reported from these localities in the papers which have come to the writers' notice. If the name of "take-all" be restricted to the disease with which *Ophiobolus graminis* is associated, there remains some doubt as to the reported occurrence of the true take-all in this country.

Early in July, 1920, the attention of Mr. R. G. Palmer, field assistant of the Department of Plant Pathology, was attracted to a small spot in a field of soft red winter wheat at East Rochester, New York. The plants within an area eight to ten feet in diameter were badly dwarfed and prematurely dead. In many cases secondary culms had been killed soon after their formation. On July 15 the diseased spot was brought to the attention of Dr. M. F. Barrus who brought specimens into the laboratory for examination. The roots of the plants were rotted and usually broken near the base of the culm when the plants were uprooted. The lower internodes were dark or entirely blackened and enveloped by a dense sheath-like plate of thick-walled brown mycelium. This plate of mycelium was formed between the leaf sheath and culm, as

[1] "Foot-rot Disease of Wheat—Historical and Bibliographic," Natural History Survey, Ill. Dept. Registration and Education, Vol. 13, Art. 9, 1919.

described by McAlpine[2] for *Ophiobolus graminis*. Perithicia in considerable abundance were found embedded in the leaf sheath and mycelial plate. Microscopic measurements of perithecia and ascospores agree very closely with those given by Saccardo for *Ophiobolus graminis*.

As soon as a determination of the fungus had been made steps were taken to determine the source of the infection and to completely eradicate the disease from the infected area. An inspection was made of the farm which had grown the seed for the past two years. No evidence of take-all was found on this farm or on any of a considerable number of others in the vicinity of the diseased field and elsewhere. The crop from an area forty feet in diameter was spread over the ground and gasoline was poured over the infected spot and vicinity. The whole was then burned over.

The writers are indebted to Dr. W. B. Brierly, of the Rothamsted Experiment Station, England, and Professor Et. Foëx, of the Station de Pathologie Végétale, Paris, France, for examination of the affected wheat. Dr. Brierly states that the disease is indistinguishable from the take-all as it occurs in England. Professor Foëx concludes that the associated fungus is undoubtedly a species of *Ophiobolus*. Saccardo lists two species of *Ophiobolus* as occurring on wheat, *O. graminis* Sacc. and *O. herpotrichus* (Fr) Sacc. The ascospores of *O. herpotrichus* measure 135–150 × 2–2.5 microns, practically double the spore length of *O. graminis*. It has already been pointed out that the fungus under consideration agrees closely in spore measurements with Saccardo's *O. graminis*. It is not intended here to settle the question of the pathogenicity of the *Ophiobolus* as it occurs in this country or abroad. However, both the fungus and the diseased symptoms with which it is associated agree in essential details with the take-all of wheat and *Ophiobolus graminis* as described in Australia, France and elsewhere.

R. S. KIRBY,
H. E. THOMAS

CORNELL UNIVERSITY

[2] McAlpine, D., "Take-all and White Heads in Wheat," Victoria Dept. Agr. Bul, 9, 1904.

THE AMERICAN CHEMICAL SOCIETY. XII

DIVISION OF PHARMACEUTICAL CHEMISTRY

Charles E. Caspari, *chairman*

Edgar B. Carter, *secretary*

Stability and chloramine antiseptics: JULES BEBIE.

Chemistry and pharmacology of the chloramines: CARL NIELSEN.

Colorimetric estimation of adrenalin: WILBUR L. SCOVILLE.

Improved methods for arsenic estimation: H. F. FARR.

The melting point and the determination of free salicylic acid in acetyl salicylic acid: L. A. WATT.

Biological methods for digitalis assay: HERBERT C. HAMILTON.

Researches on hypnotics: E. H. VOLWILER.

Researches on anesthetics: ROGER ADAMS.

Wood alcohol and prohibition: CHAS. BASKERVILLE.

Drug absorption in the intestinal tract: G. H. A. CLOWES and A. L. WALTERS.

Iodine tolerance of the human body and iodine therapy: H. C. P. WEBER. A very unusual case of cure of tubercular meningitis is discussed. Only isolated instances of recovery from this disease are known in the literature. The cure was effected by dosage with extraordinary quantities of iodine, given as tincture with various albuminoses and fatty vehicles of administration. The maximum was 1 gram of iodine per day (equivalent to 0.033 g. per kg. body weight); the total equaled 12.35 g. over 22 consecutive days. No iodism was noted. The conclusions drawn were that (*a*) the maximum dose of I is not known, (*b*) the disturbing effects, iodism, are astonishingly small, or even absent, (*c*) therapeutic effects as bactericide, require piling up of I in the body, (*d*) that the disturbing effects of KI are often confused with the effects of I itself, (*e*) that aside from this, the methods of administering the I are of less significance. These conclusions seem to be worthy of, and require, verification.

The pharmaceutical chemistry and pharmacology of the chloramines: CARL NIELSEN. To obtain best results with the chloramines some knowledge of the chemistry of these products, particularly as regards incompatibilities, combinations and pharmacologic action, is essential.

Research on hypnotics: E. H. VOLWILER. History of hypnotics, soporifices, and sedatives.