university, in summing up his criticism on experimental psychology, said that the new results of that science, for example, Weber's law, were not strictly true; and their true and valuable results had been set forth centuries before in rational psychology. In the other congress, shortly after, I heard the representative of another great university say that a single study in experimental psychology, carefully worked out, was of more value than all the works on rational psychology which had ever been written. A friendly rivalry between the advocates of different methods is probably stimulating and favorable to the development of science; but the depreciating of all methods except one's own, and the rejection or neglect of results obtained by other methods, is certainly detrimental to the specialist himself, and it lessens the reliability of his work. A conference between all those interested in psychology would have been very desirable.

There were some surprises at these congresses for which the programs could not prepare us. At the Congress on Rational Psychology, over which the venerable ex-President McCosh presided, some *irrational* speakers persisted in making themselves prominent when the subjects were open for discussion. On the other hand, at the Conference on Aerial Navigation, where some people went expecting to see the "cranks," there was nothing but plain statements of observations made, experiments tried, results achieved and theorems proved. At no other congress, perhaps, was there such a pressure of really valuable and original matter. The three days set apart for the conference, with doubt as to whether so much time would be needed for the discussion of such an embryonic art, proved to be quite insufficient; and even a fourth day did not give time for the reading of several valuable memoirs offered by practical and scientific men who are devoting much of their time to arts aerial without hope of any immediate financial return.

The Congress on Woman Suffrage was notable for the large number of men present who seemed to enthusiastically support the claims of their sisters. The Congress on Jurisprudence and Law Reform, where the most serious debates might have been expected, was characterized by the amusing stories and reminiscences of venerable judges.

The Congress on Social Settlements was a very earnest conference between ardent young college graduates, who constitute most of these settlements, and philanthropists and socialists.

The number of eminent visitors from abroad who have participated in most of these congresses has been sufficient to make the term "International" no misnomer. So many valuable papers have been read at these meetings, and the average excellence has been so high, that it is very desirable that the proceedings of all the congresses, including the discussion of papers, should be published in uniform style, fully indexed, and offered for sale at a price to secure a large circulation. An effort is to be made to have such an edition published and widely distributed by our government. The whole work would be a kind of thesaurus of practical knowledge. The theorists and visionaries have contributed their part to each subject, but generally it has been only a subordinate part; and the proceedings as a whole have been characterized by great practical wisdom.

The World's Congresses have been a kind of university for which the fair has served as museums, laboratories and recreation grounds. The congresses, although they have the mottoes, "Not things, but men," "Not matter, but mind," are officially designated as "auxiliary" to the exposition; I am inclined, however, to consider the exposition as auxiliary to the congresses.

A NEW FACTOR IN FRUIT GROWING.

BY B. T. GALLOWAY, WASHINGTON, D. C.

DURING the past three years the Division of Vegetable Pathology in the U. S. Department of Agriculture has been engaged in the study of twig or fire blight of the pear and apple. In the course of these investigations, which were for the most part carried on by Mr. M. B. Waite, an assistant in the Division, an attempt was made to obtain some definite information in regard to the relation of insects to the disease in question. As a result of this work it was shown that the organism causing blight was disseminated by insects during their visits to the blossoms. The blossoms, it was found, were readily infected by the pear blight germs brought to them by insects, the result being the death of the flower and frequently the twig or branch supporting the latter. This discovery raised the question of the necessity of insect visits to the flowers of pears and other fruits affected by blight. It was thought that if by some practical means insects could be excluded from the flowers without interfering with the fruitfulness of the trees, one form of blight at least might be prevented.

In order to obtain some information in regard to the effect on fruitfulness of excluding insects a series of experiments were made at Brockport, New York, in the spring of 1891. The results of these trials were somewhat startling, as it seemed to indicate a fact hitherto overlooked by scientific and practical men, viz., that many of our well-known varieties of pears will not set fruit unless their flowers receive pollen from other varieties. In other woods, the visits of insects, by means of which cross-fertilization is effected, is necessary to insure proper setting of the fruit.

To obtain further information on this subject more extended experiments were made on this subject in 1892 and 1893. This work was carried on in Virginia, New York, and New Jersey, the results in every case confirming those obtained in 1891. The facts obtained by these investigations seemed sufficient to warrant the important conclusion that most of our common varieties of pears and apples are unable to fertilize themselves. This law can hardly be called new, for Knight, Darwin and others have touched the same point in a broader and more general way. Strange to say, however, no one, up to the present time, seems to have applied the conceptions of Darwin and others on this subject to some of our common fruits, although it has long been recognized that orchards of pears, apples, plums, etc., fail to bear fruit regularly, even under the most favorable conditions.

In the light of our present knowledge it is known that unfruitfulness, in many cases, is due to the fact that large blocks of single varieties have been planted. In such cases there is not sufficient foreign pollen to effect fertilization, consequently the trees bloom profusely but no fruit sets. The new factor, therefore, which confronts the grower of pears and apples is to select his varieties and plant them in such a way as to insure cross-fertilization. Of course, in doing this it will be necessary to observe a number of important points, the details of which need not be given here. Suffice it to say that the time of flowering of the various varieties must be kept in mind in selecting those designed for pollinating. Then again, the question of the potency of the pollen with respect to the variety it is intended to grow must of necessity be considered, and, finally, it will be important to know what proportion of pollinating trees to trees it is desired to fruit should be planted.