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ON THE DEVELOPMENT OF PLANTPATHOLOGY IN JAPAN: A BRIEF HISTORICAL SKETCH.

By

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It is a great honor and pleasure for me to give a brief historical sketch on the opening pages of the first number of this new journal on the development of plantpathology in Japan.

Plantpathology in its widest sense means plant protection against all sorts of damages inflicted upon the plant by either man or animal, and those caused by unfavourable conditions of climate, soil, manure, etc.

From remote antiquity, it was one of the chief duties of the legislators in Japan and China to protect their peoples from these calamities, especially cereal famines caused by epidemic plant diseases, injurious insects, unfavourable weather conditions, etc. Historical records and literatures on these subjects are abundant, and cannot be discussed here in detail.

But a few accounts may be mentioned as examples. Barren years caused by insect-pests are faithfully recorded in the Chinese history, and we can trace the events back as far as 1100 B.C. Indeed in Ch'un ts'iu (春秋), a history written by the celebrated Chinese Philosopher CONFUCIUS, it is stated that an insect-pest broke

out in Lu (魯) dukedom in September of the fifth year in the reign of Duke YIN (隱公), which devoured the pith of the halms of the young shoots of cereals. In the same book, another insect-pest of cereals, caused by grasshoppers is mentioned to have taken place in August of the sixth year of Duke HSUAN (宣公), and the same pest occurred repeatedly in the autumn of the thirteenth and the fifteenth year of the same reign.

Also, a damage of agricultural products caused by a deluge occurred in the seventh year; and a barren year caused by drought, is recorded to have taken place in the tenth year of the same reign. In these times and also still later, historians and peoples in the orient thought that such calamities originate as the results of ill virtues and bad conducts of the ruling sovereign, and the sovereign himself believed that the conditions might be improved and the unlucky events averted only by his good behavior and by his true faith in the Heaven.

In Tung kin kang mu (通鑑綱目), we find a case of grasshopper-pest, which took place in June 143 B.C. during the reign of the first emperor of Tsin (秦) dynasty. At that time, the emperor ordered the people to carry grains to his capital, and promised them high social rank for so doing. Accounts of similar nature may be found elsewhere in the Chinese and the Japanese history, and special works relating to such matters can also be cited, for instance, Kiu huang kuo min shu (救荒活民書) Huang cheng tsi yao (荒政輯要), Wen hien t'ung k'au (文獻通考), Sai i shi (災異誌), Kio kuo shi (凶荒誌) and the like.

The earliest record of frost damages on mulberry trees in China is found in Han shu (漢書), which took place in March of 48 B.C., in the reign of Emperor YUAN (元帝) of Han dynasty, when the statesman SHI HSIEN (石顯) abused his power.

In China, the use of oils as an insecticide against rice-fly was known as early as 1185 (淳熙十二年). The fact is mentioned in Sung wu hing chi (宋五行志). Also, the practice of steeping cotton seeds in boiling water before sowing is mentioned in a Chinese work Yu tai mien hua t'u (御題棉花圖), published in 1765, about 120 years anterior to the discovery of the hot water treatment by Prof. JENSEN in Europe.

It is also remarkable that in a Korean literary work Kio ho shi (杏蒲志), written by JO YU KU (徐有榘), we find a description of a bad influence of *Juniperus* on pear trees, about 20 years earlier than the discovery of host alternation of pear fungus by Prof. ØRSTED in Europe.

The translation of the Korean text word by word is as follows: "Pear trees

dislike very much *Juniperus chinensis*, which is vulgarly called in Corea 'lau sang' (老松). If a single *Juniperus* tree stands near a large orchard consisting of pear trees, entire forest will perish in the mean time."

This is not the place to point out all such informations relating plant diseases in the Japanese and Chinese literatures, so I must leave the questions for future investigations. And now let us turn our attention to matters of more recent period.

After the great revolution which took place in 1866, the Japanese government took much pains in introducing European civilization, and the department of education invited from Europe and America to our country eminent professors in all branches of science and arts, among whom was professor HILGENDORF from Germany. He came to Tokyo, and taught botany and zoology in a medical institute, Kaisei Gakko (開成學校).

In his lectures on medical botany, it is said that he often dwelt at some length on the subject of plant diseases.

After his return to Germany, Prof. AHLBURG came to Tokyo in his stead. His speciality was horticultural botany, and he delivered special lectures on plant-pathology to the members of a private assembly of amateur agriculturists, consisting of S. MATSUBARA, T. KUGA, K. KUSAKA, X. ŌTSUKA, etc.

In 1878, Agricultural College of Komaba, in the vicinity of Tōkyō was established, and S. MATSUBARA was appointed teacher of botany and zoology there.

In 1880, a special course called Shokuikwa (植醫科), meaning plant medicine, was newly opened in the same College, and 19 candidates were allowed to enter, but unfortunately from some unknown cause, this new course was abolished in the following year.

In 1881, Prof. C. SASAKI was appointed teacher of zoology and botany in Komaba Agricultural College, and he occupied himself in the study of the diseases of silkworms and mulberry trees.

In 1882, Tōkyō Botanical Society was established and issued the first number of the Tōkyō Botanical Magazine in February of 1887. In this magazine which continues till to-day, papers on plant disease are often published.

In 1886, I was appointed teacher of forest botany and plantpathology in the Komaba Agricultural College.

At that time, the only reference books on plantpathology, which the library of our-school possessed, were SORAUER'S Handbuch der Pflanzenkrankheiten edited in 1874, and the first edition of R. HARTIG'S Lehrbuch der Baumkrankheiten.

In 1899, the first number of the first volume of the Journal of the College of Science, Imperial University of Tokyo, was published, and in it an article on a new disease of mulberry trees caused by a parasitic fungus worked out by N. TANAKA appeared.

In 1899, section of plantpathology in the Central Agricultural Experiment Station at Nishigahara was organized, and S. HORI and Y. UYEDA were appointed leaders of the mycological and bacteriological laboratories respectively.

In 1903, IDETA's *Lehrbuch der Pflanzenkrankheiten* appeared, an epochmaking work on this branch of botany in Japan.

In May 1906, a professorial chair for plantpathology was provided for the first time in the Agricultural College of the Tokyo Imperial University.

In 1914, rules for examining and disinfecting plant goods for foreign trade were issued, and special office for this purpose was opened in a chamber of the custom-house in each of the five chief trading ports of Japan, i.e., Yokohama, Kōbe, Nagasaki, Moji, and Tsuruga.

In the same year, a journal of plantdiseases written in Japanese was published and continues its activity till to-day.

This is a brief historical sketch of the development of plantpathology in Japan, especially in Tōkyō, which I know at present.

I regret that I know very little of the course of matters in Sapporo Agricultural College, and pathological institute in the Tōhoku Imperial University in Hokkaido. Prof. K. MIYABE, chief of the botanical institute of the Agricultural College, Tōhoku Imperial University, who has studied botany and mycology under Prof. FARLOW in Yale University, America, I believe, is well fitted to set forth and explain the historical facts relating plantpathology in that part of the Empire.