first in the group of five academies, by which, under the name of the *Institut*, the people of France provide for the preservation and improvement of their language, for the promotion of history, for the advancement of science, for the encouragement of art, and for the establishment of just ideas in morals and politics.

THE SOCIETY FOR THE PROMOTION OF AGRICULTURAL SCIENCE.

THE sixth annual meeting of this society at Ann Arbor, Aug. 25, may fairly be said to have been the best of the number, whether as regards the attendance of members and others, the number and character of the papers read, or the general interest and profit of the discussions.

The meeting was opened on Tuesday morning by a paper from Mr. J. J. Thomas of New York, upon 'The influence of locality upon varieties of fruit,' in which the author opposed the opinion which has been advanced by eminent pomologists, that varieties of fruit raised on our own soil and in our own localities are, on that account, better suited to this country. As regards pears, fully half our varieties are of foreign origin; and very many of these are among our most esteemed varieties, notably the Bartlett, and can hardly be equalled by the same number of native varieties. In the case of the apple, while many good varieties are of foreign origin, this fruit has been so extensively and successfully cultivated in America that our best varieties have come to be those of native origin. At the same time, most of the esteemed western and southern varieties are of eastern origin. The apple is very susceptible to influences of locality during the growth and ripening of the fruit; and this fact, rather than any differences due to origin, accounts for the preference shown for different varieties in different regions.

In the discussion following the paper, attention was called by Dr. E. L. Sturtevant to what appears to be the fact, that well-ripened specimens of any fruit are of the highest flavor in the most northern localities, while the size and appearance usually improve as one goes southward; and he suggested as a possible explanation the influence of actinism. During the growing season, plants receive more hours of sunlight in northern than in southern localities; and it is possible that this has something to do with their higher flavor. The subject is an important one for investigation. He also described a simple and inexpensive apparatus for automatically recording the number of hours of sunlight daily, without reference to intensity. This apparatus is now in use at the N. Y. experiment station; and the U. S. signal service is considering its introduction at a number of stations, in the hope that a record of the hours of sunlight may at least show whether it is desirable to attack the much more difficult problem of measuring its actinic intensity.

Prof. W. J. Beal confirmed Dr. Sturtevant's statement as to the flavor of fruit from northern and southern localities as regards Michigan fruits. Mr. Crozier instanced an experiment in which flowers from the same seed grown in Paris and in Upsala were much brighter colored in the more northern locality. Prof. I. P. Roberts called attention to the fact, that the soil has also much to do with the flavor of apples, stating that about Ithaca, N.Y., the best apples were grown on a clay soil and in elevated localities.

Following Mr. Thomas's paper were two by Dr. E. L. Sturtevant of New York, upon the 'dandelion' and 'lettuce.' These papers were in support of the hypothesis that the form-species of cultivated plants are not originated by culture, but are really selections from wild types. Thus in Vilmorin, Andrieux et Cie's seed-catalogue, three distinct varieties of dandelion are figured. Upon the grounds of the N. Y. experiment station, there are to be found growing wild, under conditions which seemingly preclude the possibility of their being escapes from cultivation, dandelions corresponding very closely to these three varieties. Moreover, two of these three varieties are figured respectively by Anton Pinaeus in 1561, and by Dodonaeus in 1616.

If it be granted, upon this evidence, that the cultivated varieties of dandelion are simply selections from wild types, "it may be legitimately questioned whether other of our cultivated form-species in other plants are not likewise of natural origin. A careful investigation into the history of the origin of our cultivated varieties, fully justifies the statement that I have as yet secured no data which justify the belief that form-species in culture are other than of natural origin; and I have secured much evidence in favor of the view that form-species are introductions from natural variations."

The paper upon lettuce is in further confirmation of this hypothesis. It should be said, however, that the author expressly recognizes the fact that much further study is necessary before so radical a belief can receive countenance.

In the ensuing discussion, Professor Bailey called attention to the fact that variable wild plants are those most likely to be selected for improvement, as to a certain extent sustaining the hypothesis advanced in the papers.

The afternoon session was opened by a paper upon 'The demands made by agriculture upon the science of botany,' by Prof. C. E. Bessey of Nebraska. The paper was devoted to the subject of the teaching of botany in colleges; and the writer made an earnest plea for the more extensive and thorough study of this science, classifying the demands made upon it by agriculture under three heads: First, a nomenclature and classification of the plants of the farm, cultivated as well as wild. Second, a better knowledge of the physiology of plants, including such subjects as growth and nutrition, fertilization, heredity, and the physiology of cultivation and improvement. Third, a better knowledge of the pathology of plants, particularly of that ill-defined state known as 'lowered vitality.'

Several speakers following Professor Bessey, commended the sentiments of his paper, and deprecated the undue attention given to systematic botany in many cases, where the chief end of the study seems to be to enable the student to find out the technical name of the plant.

A paper by Prof. T. J. Burrill of Illinois, upon 'An experiment in silk-culture,' came next upon the programme. The experiment was but very partially successful as regards the production of silk, the larger part of the worms dying of a contagious disease at about the time when they should have formed cocoons. The investigation of this disease formed the main subject of the paper. The disease was identified by the author, and by Professor Forbes, with the *flacherie* of Pasteur, and was plainly not the disease which he describes under the name *pébrine*. It also appears to be identical with a disease which has lately proved very fatal to the larvae of the cabbage butterfly.

The writer was not aware that any one had previously positively determined the existence of true *flacherie*, or of *pébrine* in America; but, if the conclusions of his paper were correct, the former, at least, has, in all probability, long existed here unrecognized.

In remarking upon the above papers, Prof. C. V. Riley claimed that both these diseases of the silkworm had been recognized by entomologists in this country, though they had not been able to give the disease that careful microscopical and bacteriological study which Professors Burrill and Forbes had done. He also stated his belief that the germs of *flacherie* are omnipresent, and that the disease may be induced at any time by unsanitary conditions.

A paper followed by Major Henry E. Alvord of New York, upon 'Telemetric aid to meteorological records,' describing briefly an apparatus made by the Telethermometer company of New-York city, by which a continuous record of temperature can be obtained at any reasonable distance from the place of observation, and with very little trouble. The results of about six months' comparison of one of these instruments, with thirteen daily readings of a standard mercurial thermometer, showed a tolerably close agreement between the two. The telethermometer was slightly tardy in its changes, and usually failed markedly to reach the minimum daily temperature, and frequently fell a little short of the maximum. The author considered it — though by no means perfect — to be the best aid yet found for recording atmospheric temperatures in connection with agricultural studies.

The next paper was by Prof. H. P. Armsby of Wisconsin, upon 'The creaming of milk by the Cooley system.' It was chiefly statistical, giving the results of some two hundred and fifty experiments in creaming the milk of single cans by this system; and showing that in eleven hours 90–99 per cent of the fat of the milk was recovered in the cream, as against 75–80 per cent in some recently reported German experiments in which the temperature of the water surrounding the cans of milk was much higher. The experiments furnished also some hints as to further investigations upon the influence of small variations of temperature upon the process, but no definite conclusions.

A paper by Prof. G. C. Caldwell of New York, upon 'The lactobutyrometer,' consisted chiefly of a review of the tests of this instrument on record; but contained also some experiments as to the cause of the failure of the process in certain cases to extract even approximately all the fat from milk, particularly that from highly-fed cows. The author concludes that his experiments are at least not inconsistent with the belief that either an albuminous envelope, or some sort of an accumulation of albuminoid matter about the fat globules, gives rise to the difficulty.

A brief report by Prof. W. J. Beal, upon the progress of experiments on the vitality of buried seeds, and a short account by Prof. C. V. Riley of a new remedy for locusts, which has been successfully used in California, and the reading by title of a paper by Prof. E. W. Hilgard "On some redeeming traits of 'alkali' soils," closed the reading of papers.

At the business meeting, the following officers were elected for the ensuing year: President, Henry E. Alvord; secretary and treasurer, B. D. Halsted; executive committee, Henry E. Alvord, B. D. Halsted, and E. M. Shelton.

THE DEVELOPMENT OF THE EYE.

IN a recent paper before the Philadelphia academy, Dr. Benjamin Sharp has endeavored to trace the development of the highly complex vertebrate eye from the simplest deposit of pigment in an epithelial cell. The simplest organ of vision is found in the Lamellibranchiata; but these are not the primitive organs of the group, the ancestral eyes being present in a few forms for a short time during the free larval stage. The most primitive adult eyes are found in the common oyster, in which the free edge of the mantle is lined with a number of epithelial cells (fig. 1) having a nucleus (n), a deposit of pigment (p), a transparent cuticula (c), with an undoubted power of vision. The next step of advance is illustrated in the common Venus, in which the eye are confined to the most exposed part of the body, the so-called siphon. So far there has been no protection to the visual organs other than that afforded by the shell; but in Venus the fact that there are pigment cells at the base as well as on the extremities of the tentacles indicates a change soon to take place. This change is well shown in the razor-shell Solen (fig. 2), where all the eyes are arranged about the base of the tentacles, and, furthermore, are sunk into deep grooves. The organ is also much more perfect.

FIG. 1. — Visual cells of Ostrea virginica. c, cuticle; p, pigment; n, nucleus.

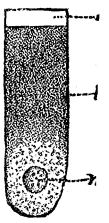

FIG. 2. — Ot visual cell Solen vagin c, cuticle; pigment; nucleus.

In the Gastropoda, from which the lamellibranc have probably degenerated, the visual organs ta