ment of the larger questions, seem to me distinct and practical steps in the direction of development which the university administration ought to study.

For one must not forget in considering the administration of a university that there are to every form of administration two sides: the mechanical and the spiritual. The mechanical part of administration is that which provides the machinery necessary to carry out a given enterprise. The other side of administration, the spiritual side, consists in getting out of men the best there is in them. For a set of perfect men any administrative system would suffice. Good administration consists in taking men as they are, with their prejudices, their faults, their virtues, and in getting out of them the highest results of which they are capable.

Now, our attention has been given of late years, in American university life, increasingly to the mechanical side of administration, and the machinery has been made to approximate more and more closely, both in its form and in its choice of executive officers, to the practise of the business corporation. Its very closeness and compactness of organization are in some respects its chief faults. That which is mechanical is always simpler than that which is living. To-day we need, in my judgment, to concern ourselves in the university with the spiritual side of administration.

It has been my purpose rather to state questions than to argue them; not to propose a substitute for our present administration of the university, but rather to point out certain tendencies in it. To inquire whether, if the republic be the ideal system of administration, it is not also a good one for the scholar, and to ask, at least in these days when events move so rapidly, whether the administration of the university as it is now organized tends toward the development of a larger type of professor and a finer order of students; to ask whether we are developing the mechanical side of the administration at the expense of the spiritual side.

For after all, we can never too often remind ourselves that the first purpose of the university is not to further industrial development or to increase the wealth of a state, but that it is the development of the intellectual and spiritual life. This development can take place only in the air of freedom, however evident are the dangers which freedom brings with it. Wealth, power, the niceties of life, may all grow in an atmosphere of limited or of artificial freedom, but only in the air of real freedom can be grown that spirit and that intelligence which shall minister to those things which are spiritual and to those things which are eternal.—President Henry S. Pritchett, of the Massachusetts Institute of Technology, in *The Atlantic Monthly*.

AGRICULTURE IN THE SCHOOLS.

A DISTINCT step in the direction of encouraging the teaching of agriculture in the high school is the movement to recognize that work in the entrance requirements of higher institutions. To a certain extent these higher institutions determine what must be taught in the high schools leading up to them. Heretofore there has been no inducement to schools that were fitting for the colleges and universities to offer such courses, however much they might desire to do so, and no incentive to a student to take agricultural work if it were offered, since it would not entitle him to credit in meeting the entrance requirements.

This matter has been under consideration in several states, for it has been recognized as a bar to progress in introducing agricultural studies. Definite action has now been taken in Missouri. The university in that state practically determines what shall be taught in the high schools, as students are admitted to it on their accredited high school work. Members of the agricultural faculty have been urging that agricultural work in the schools should be given some recognition, and the council of the university has recently decided to allow a credit of one unit on the entrance requirements for a year's work in agriculture in a high school. Boys who are planning to pursue the agricultural course in the university can now take elementary work in the high school without endangering their standing for entrance to the university. It is believed that this recognition will stimulate the

offering of agricultural subjects in the high schools, and that advantage will be taken of this opportunity by a considerable number of pupils. Several of the schools have shown an interest in agricultural work and desired to introduce it, but have been deterred by the necessity of meeting the requirements in the subjects credited.

A somewhat conditional victory in this direction has also been gained in New York state. There the state regents of education determine what subjects are to be credited in the regents' examinations for entrance to colleges or universities in the state, and agriculture has not been included in the list. Naturally no other subjects would be offered at high schools except as electives, and pupils fitting for college would not be likely to take such elective studies with no chance for credit. This has handicapped the college of agriculture at Cornell in its efforts to extend the teaching of nature study and elementary agriculture in the public schools, and that institution has brought its influence to bear upon the regents of education. At a meeting held last winter the regents decided to allow credits in the regular high school courses for nature study and elementary agriculture, provided the courses in these subjects were so prepared as to show educational values comparable with other subjects now recognized. Since this announcement the faculty of the college of agriculture has been at work on the syllabi of courses in the subjects under consideration, with a view to securing their approval by the board of regents. In that case it is expected that several of the high schools will offer elective courses in agriculture, which will enable them the better to prepare students for the higher agricultural work of the college.

It was the contention at the meeting of the Association of American Agricultural Colleges and Experiment Stations at Des Moines last fall, that the public schools should lead up to the agricultural colleges as they now do to colleges of arts and sciences; and President Jesse explained that in Missouri 'we are risking our entire future on the doctrine that the college of agriculture should rest on the public high school, and we are going to make the public high school agricultural so far as it ought to be agricultural.' The recognition of agriculture as a teaching subject and as having an educational value will do much to bring about this desired end. It will bring elementary and advanced work in agriculture closer together, and will articulate the agricultural college and the high school as they have not been before.—*The Experiment Station Record.*

BOTANICAL NOTES.

MORPHOLOGY OF THE EAR OF INDIAN CORN.

Mr. E. G. Montgomery, of the University of Nebraska, in a paper soon to be published, offers a new explanation of the morphology of the 'ear' of Indian corn (*Zea mays*). Briefly stated it is that the ear corresponds to the central spike of the tassel. This normally bears from four to eleven rows of paired spikelets. In the staminate inflorescence one of the spikelets in each pair is sessile, and the other stalked, but in their transformation to the pistillate structure the pedicel of the stalked spikelet becomes shortened more and more until it is sessile, thus forming a double row of kernel-producing spikelets, and accounting for the fact that the ear always has an *even* number of rows. Hermaphrodite flowers are common in such transformed spikelets.

A NEW BOTANICAL TEXT-BOOK.

Under the name of 'A College Text-book of Botany' Professor Atkinson has brought out (Holt & Co.) an enlargement and considerable improvement of his 'Elementary Botany' (1898). In it the author has attempted to present an outline of the science in a form sufficiently condensed to be readily covered by college students in the time usually allotted to botany in the better class of colleges and universities. The book differs from most of those hitherto prepared in the sequence of topics, beginning with physiology, to which thirteen chapters (135 pages) are assigned. Following this are twenty-four chapters (213 pages) on the morphology of plants. Eight chapters (115 pages) are given to 'Plant Members in Relation to their Environment,' fol-