SCIENCE

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MSS. intended for publication and books, etc., intended for review should be sent to the responsible editor, Professor J. McKeen Cattell, Garrison-on-Hudson, N. Y.

*EDWARD ORTON, EDUCATOR.**

I RESPOND this afternoon to a summons difficult to obey but impossible to deny. I am reluctant to undertake what could be done so much better by others, but it is impossible for me to decline to join in doing honor to the memory of one whom I so much loved and admired, however feeble and inadequate my words may be.

My association with Dr. Orton extended through a period of nearly thirty years. Beginning as a casual acquaintance, such as is common among men engaged in the same occupation, it rapidly ripened into a friendship which, happily for me, grew in strength with the years as they passed. My most intimate personal relations with him existed during the earlier years of the Ohio State University, the institution to which he gave so large a share of his life's work, and which to-day makes fitting acknowledgment of the value of that work and of the irreparable loss which it has sustained in his death. Of Dr. Orton as one of the most eminent of geologists of his time, of the splendid example which he set in the performance of the duties of plain citizenship, and of the many other striking characteristics of a career which is rarely paralleled, others will speak, and I will re-

*Read at a Memorial Meeting, Columbus, Ohio, November 26, 1899. A portrait of Orton was published as a frontispiece to the issue of SCIENCE for September 1, 1899.

strict myself, therefore, to remarks upon his earlier work in this university and his influence as an educator rather than as a specialist.

I firmly believe that no one can fully understand and fairly evaluate Dr. Orton's services to the university during the first ten years of its existence who was not himself in some way or other a part of its official organization during those years, and in close touch with methods and motives by which its future career was determined, and I must ask your indulgence in a brief statement of some of the conditions under which the institution came into existence.

The Act of Congress which created this and many other noble institutions of learning, having been passed in the most discouraging and gloomy year of the great Civil War, did not receive immediate consideration and acceptance by many of the States, and in Ohio there was a delay of nearly ten years before those interested saw definite promise of the actual realization of their hopes. In the meantime and during the latter part of this period there was much necessary and useful discussion in regard to the character and scope of the proposed school. Innumerable schemes for utilizing the prospective income were thrust upon the public, and there was much strength in support of a division of the fund among several existing institutions. The first board of trustees courageously resisted all attempts to destroy by disintegration, and it was finally determined that the institution should be located at Columbus and known as the Ohio Agricultural and Mechanical College.

The field of controversy was now greatly narrowed, but was, perhaps, correspondingly more intense. The character of the work of the new school, the scope of its courses and their relation to the requirements of a liberal education were yet to be determined. On the one hand were those who urged a generous interpretation of the Act of 1862, and who believed that it was primarily intended to furnish the foundation of an institution which might in time become a great university for all of the people; that while, in the provisions of the Act the nation had determined to fortify and invigorate the two great sources of the State's material prosperity, agriculture and manufactures, especial emphasis had also been placed upon the importance of fostering the more purely intellectual or culture components of a well-rounded course of study, for it was specifically directed that these must not be neglected. On the other, was a considerable group of men, equally honest, conscientious and well meaning, who wished to organize a school, intensely practical in tone and atmosphere, in which even science would have found no place except as applied science, and which would have offered little opportunity to those—and, fortunately, they are many—who seek to show their right to labor in the higher regions of more purely intellectual activity. Both sides of this most important controversy were represented by strong men in the first board of trustees, and it is but justice to all to say that the conflict was waged in a manner worthy of the dignity of the occasion and of the great trust for which they had become responsible. I cannot here even refer to the various phases of this discussion or to those who were most active and influential in shaping the organization of the school, nor can I omit saying that to the first president of the board of trustees, Valentine B. Horton, and to Joseph Sullivant, then and long one of the leading citizens of Columbus and of Ohio, the University will ever be indebted for the exercise of a courage, tact and unwearying effort that went far to put the institution in the way of being what it has been, is, and is sure to be in the future. Fortunately, they were supported by many others

of the board, who, in themselves, represented liberal culture, combined with a genuine democracy of feeling and a loyalty to the Commonwealth, compelling the belief that nothing was too good for the children of the people.

The issue was made and met in the appointment of the first faculty of instruction; and in the selection of the first presiding officer fortune was singularly favorable to the new school. A professor in a New England college who has received the highest political honors his State could confer upon him had been invited to become the president of the college, but circumstances arose which made his acceptance impossible. Dr. Orton had been in Ohio only a few years, but he had become widely and well known, not only on account of his accomplishments as a geologist, but as well by his charming personal qualities, and he had been already chosen to fill the chair of geology. To him the trustees now turned, and he reluctantly consented to be the first president of the Ohio Agricultural and Mechanical College. I say reluctantly, for it was well known among his friends and associates that he was loath to assume administrative duties which must necessarily interfere with the continued pursuit of his specialty in which he was already recognized as an authority. Happily for the institution he yielded his personal preferences, and for eight years he was at once president and professor.

Among the several thousand young men who crossed college thresholds in Ohio in the autumn of 1873 seventeen entered the building in which we now are, and enrolled themselves as students, the first of the many thousands who have since followed their example. I cannot describe and few can appreciate the many trials and difficulties of those earlier years. The institution was practically unknown, even among those from whom its patronage was most likely to come. It stood for a new departure in education which was just entering upon its experimental stage, and with few exceptions it was looked upon with suspicion by other colleges in the State. The members of its first faculty, of whom only four are now living, were mostly young men, full of ambition and enthusiasm for their work and thoroughly in harmony with the spirit of the time, for even then had come the dawn of the marvelous last quarter of the wonderful nineteenth century, a period during which, short as it is, the relation of man to the material universe to which he belongs has undergone a far greater change than in any other period in history. It is often, indeed generally, possible in looking backward upon things accomplished to see many mistakes that might have been avoided and many opportunities not properly utilized. As I review, however, the principal events of Dr. Orton's presidency of this institution I am at a loss to say, even with the better knowledge that accompanies retrospection, how the many emergencies that presented themselves could have been met more wisely. To begin with, his standard of educational work was of the highest type. He fully realized that the success of the institution depended on the establishment and maintenance of a standard of scholarship so high as to compel the respect of the best educational forces not only at home but abroad. Himself a scholar in the broadest, best and most exacting sense, he encouraged faculty and students to seek the best ideals, and no one of them who gave the slightest indication of the possession of the *divine afflatus* in learning ever failed of appreciative recognition from him. He believed that the character of an educational institution should be judged by the quality of its work rather than by the number of students enrolled in the annual catalogue, a principle which everybody admits and nearly every-

body ignores. To stand up for it and do it, especially during the early struggling years of a college, demands a courage that few possess. That Dr. Orton did this, even under the most trying conditions, I set down as, on the whole, the most notable characteristic of his career as president. For I am thoroughly convinced that if he had chosen to do otherwise, if the doors had been opened wide, at both ends of the curriculum, the institution would have long since sunk into a deserved oblivion.

Few college presidents have so continuously received the loyal support and sympathy of their colleagues in the faculty as did Dr. Orton. A college faculty is not likely to shine as an example of meek and amiable submissiveness, and this is particularly true of one composed, as this was, and many are to-day, of specialists. Twenty-five years ago, and earlier, it was usually believed that a college professor might fill any chair that happened to be vacant, and indeed more or less regular interchange of duties was often regarded as highly desirable. The passing of the era is to be attributed in a large measure to the example and influence of institutions of which this is a type. The specialist, however, is tolerably certain to hold that his own particular department is of far greater importance than any other, and he may be relied upon to desire and demand a large share of available resources to aid in its development. Upon the president falls the by no means agreeable task of apportionment and restraint, and this duty was discharged by Dr. Orton with rare discrimination, fairness and tact. No mere administrator, however skilled in that capacity, could have done as well. His scholarship was thorough and yet broad enough to enable him to know what was being well or indifferently done in every department, and is there not a freemasonry among scholars which makes mutual recognition easy even when there is no common language? I am reluctant to refer to my own personal experience on an occasion which is completely filled with one personality; but I can never forget the many instances in which I received from him encouragement in the way of sympathetic acknowledgment and often praise, for work which was doubtless trivial and unimportant, but the recognized success of which served to keep alive the fires of ambition, enthusiasm and interest.

Of Dr. Orton's relations to the students, whose numbers multiplied many times during his presidential period, it is hardly necessary to speak. Too often the president of a college is unfortunate in that he rarely comes in close relations with students except to administer reproof or define restraint. The discipline of this college in its early years was nearly as great a departure from accepted traditions as were its methods of instruction. A large degree of freedom was allowed without the asking, but the line separating liberty from license was sharply defined. It was intended to cultivate a spirit of manly self-reliance together with a full knowledge of the responsibilities of citizenship, and the administration of the few simple regulations was always so just and fair that no ground for complaint could be found. In this as in all his relations with others Dr. Orton believed in the efficacy of reason and in the doctrine that it is generally more important to convince a young man that he has done wrong than to punish him for so doing. He was slow to condemn and reluctant to punish, but I have known few men more inflexible and unflinching when a vital principle was contested. He won the confidence of all with whom he came in contact, and young and old valued his judgment, and advice. As a teacher he was most inspiring. His literary and linguistic powers were unusual, and he easily made any topic attrac-

tive, even to the dull. From hundreds of his pupils comes the testimony that to him they owe the first quickening of their intellectual life, the earliest revelation of their own moral obligations and responsibilities. There can be no higher praise than this.

Complete as was Dr. Orton's success in everything concerning the internal management of the college, his services as its representative in all its relations to the outside world were of far greater importance. The young institution was but coldly received at first, and this was especially true among those who ought to have been its friends. There were numerous harsh and unjust criticisms of its course of study, its faculty, its board of trustees, and it was even attempted by a few men of influence to make it a football of partisan politics, so that its organization might be completely changed with every change in State administration. Against these and many other adverse conditions its board of trustees, president and faculty had to contend. The confidence of the people had to be won and was won, largely by the strenuous but tactful efforts of the president. An eloquent exponen tof the progress of scientific thought, in more departments than one, Dr. Orton was everywhere welcome upon the lecture platform. In cities, towns and villages, in grange and farmers' institute, in teachers' convention and literary society, whenever men and women met to foster intellectual growth, he was heard with delight and approbation. His speech was choice, yet simple, clear and dignified, often rising to an eloquence, never of sound or mere words, but of noble thought. Fortunate, indeed, was the new college in having so splendid an exponent, and it is not strange that gradually but surely there came to its support a large and influential constituency from among the best people of the State.

Nor was there any lessening of his influence in its behalf when, after several attempts and against the wishes of the friends of the college, he induced the board of trustees to relieve him of administrative duties and allow him to devote his entire time to his professorship. After that time much of his most important scientific work was done, and as State geologist he became, even more than before, familiar with every nook and corner of the State. His broad democracy of spirit and his generously helpful disposition combined to put him in close touch with the great industrial interests of Ohio, including man as well as matter. He knew the miner as well as the mine, and it would be difficult to measure the value to the university of his almost unique relations with the productive forces of the Commonwealth. The beautiful and noble building which bears his name, and which, from this time on, will stand as a monument to his memory, bears witness, in the very stones of which it is composed, of the readiness with which these forces responded to his touch.

But still more enduring will be the traditions of his life and work in and about this institution, his charming personality, his felicitous speech, his lofty moral and intellectual ideals.

His title to high, perhaps highest, place among the great benefactors of the university, those who by wisdom and tact first made its existence possible and afterward its destruction forever impossible, rests upon a foundation as solid as that of the rocks he so much loved.

"Say not of me that I am dead," were the last words of a great English poet; "Say not of him tha the is dead" are our words to-day; speaking for the few who have been privileged to enjoy the most intimate personal friendship, as well as for the many, scattered over this broad land; for all our lives have been better and will be

better because of their having intermingled with his.

Thomas C. Mendenhall.
Worcester Polytechnic Institute.

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*EDWARD ORTON, GEOLOGIST.**

It was in the autumn of 1869, just thirty years ago, that I first met Dr. Orton. In that year the Second Geological Survey of the State was inaugurated under the directorship of the late Professor Newberry; Governor Hayes named Dr. Orton as one of the two principal assistants for which the law made provision; and it was my own privilege to be accepted, at the same time, as a volunteer aid. In the arrangement of duties Dr. Orton took charge of work in the southwest quarter of the State, and Dr. Newberry gave chief attention to the northeast quarter. Being assigned to Newberry's corps, I had no opportunity to meet Dr. Orton until late in the season, when I had the good fortune to be bidden to attend a conference of the chiefs at Columbus. While on the journey from Cleveland, Newberry prepared me for the meeting by sketching the quality and character of his colleague—a man without guile, direct in his conversation, and absolutely transparent as to motive. The simplicity of manner which would impress me at the start was not of manner merely, but was a fundamental trait coördinate with, and not contradicted by the wisdom which made him a man of affairs. His sensitive conscience making him peculiarly careful to adhere to the facts of observation, he was cautious and conservative in all his geologic work.

Newberry's description naturally made a strong impression, and in the conference that followed it is probable that I gave as much attention to the man as to the subjects of discussion. Certain it is, that the geologic themes have vanished from my memory, while the picture of the man remains. In later years, as we met from time to time, as I listened to his voice in public address or read the papers that emanated from his pen, I was able to add here and there a detail which Newberry's sketch had failed to delineate, but no line of it was ever erased, and Orton has remained for me one of the safest and most open-minded of investigators and the simplest, kindliest, and most lovable of men.

To what extent considerations of historical fitness may have determined the arrangement of to-day's exercises I do not know, but certainly there was peculiar propriety in giving first place to Orton's work as an educator. During the first half of his period of intellectual activity education was the primary theme, and it was only in later years that geology assumed prominence. We are told that his first geologic observation was undertaken with the distinct purpose of increasing his efficiency as a teacher of geology, and in his early acquaintance with rocks and fossils his point of view was educational. Interest in geologic studies for their own sake was a matter of development, and many years elapsed before it assumed control in the determination of his fields of activity. This peculiarity of his introduction to the science in which he finally achieved distinction had much to do with the quality of his scientific work and scientific writings.

It determined, in the first place, that he should not specialize at the beginning of his career. In geology, as in medicine, there are general practitioners, broadly versed in the principles and particulars of the science, who are prepared to undertake and conduct investigations of great variety; and there are specialists, each devoted to some minor branch of the general subject, in which he works intensely and exhaustively. The specialist, restricting his attention thus to

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