

above the immediate subject. This is one result of the old liberal education, in which philosophy and even poetry counted. A mere administrator's view of caste amounts to little.

The first annual report of the Hamburg Colonial Institute shows that the leading foreign port of the German Empire has begun in earnest, and with every promise of success, to train its citizens for useful lives in the colonies. The German Colonial Office acted in harmony with the local authorities to perfect an organization which should unite practical and theoretical instruction. It works with other Hamburg educational institutions, such as the Natural History and Ethnological and Geological Museums, the Astronomical Observatory, the Botanical and Zoological Gardens, the Agricultural station, and the Institute for Ship and Tropical Diseases. Instruction is supplied in geography, public law, the history of the East, the languages of East Asia and Africa, and in hygiene of the German colonies. A hall of public lectures, the gift of a citizen of Hamburg, was made its permanent seat. Teachers were brought from the universities, and work began with twelve instructors, and local schools increased the number to thirty-five. Hamburg supplies its city library of above 600,000 volumes, and its commercial library.

Liberal provision for the expenses was given by both from the public treasury and large gifts from its citizens. Instruction in Eastern languages is made prominent, and both for the native German students and for those coming from German colonies, opportunity is given to study German industries in the busy centres of their growing activity. The report contains a detailed account of the large number of lectures given in two terms, October to March and April to August; there were more than 1,100 students and hearers, 16 diplomas were awarded after examination, and among those in attendance were merchants, judges, lawyers, army and navy officers, land owners, engineers, and officials. The Colonial Institute supplies a Bureau of Correspondence for answers to inquiries on specific points in colonial life, business, and interests. It acts as intermediary between German manufacturers and colonial consumers, and equally between the colonial producers and German and other possible purchasers. All this has been done by a wise union of local and imperial forces. Why cannot our universities thus join the Washington authorities and give the officers and settlers of our colonies like opportunity for training?

Science.

Ants, Their Structure, Development, and Behavior. By William Morton Wheeler, Ph.D., Professor of Economic Entomology, Harvard University; Honorary Curator of Social Insects, American Museum of Natural History. New York: The Macmillan Co. \$5 net.

It is safe to say that no entomological work of higher qualities than this, perhaps none of equally valuable qualities, all things considered, has recently appeared. Whether one regards Profes-

sor Wheeler's work from the standpoint of the systematist, the anatomist, the ethologist, the psychologist, the natural philosopher, or the bibliographer, one is struck by the complete and easy grasp of his subject, and by the painstaking labor and erudition herein shown. Even in the selections from authors chosen for chapter mottoes, which range through Latin and Greek writers, and German, French, and English literature, one marks the facility and felicity of his mastery of his theme.

Perhaps there is no insect—not even the bee—so well adapted by its natural endowments to attract and hold the interest of men as the ant. As Professor Wheeler remarks in his opening chapter:

This interest is aroused by an undeniable resemblance to our own condition. Reflection shows that this resemblance cannot be superficial, but must depend upon a high degree of adaptability and plasticity common to man and the social insects; for in order to live in permanent commonwealths, an organization must be not only remarkably adaptive to changes in its external environment, but must also have an intense feeling of cooperative forbearance and affection toward the other members of its community.

Professor Wheeler has here touched the keynote of the last book of his collaborator in myrmecology, Dr. McCook's "Ant Communities, and How They Are Governed," which appeared only a few months before his own, and with which, perhaps, one is likely to compare it. There are, however, but few points of contact and comparison, except in descriptions of the habits of such interesting species as the agricultural ants of Texas and the American plains, the cutting ants, the honey ants, and the mound-making ants of the Alleghenies. In these points the two authors confirm each other. Otherwise, they move independently through their chosen fields. Professor Wheeler's is the more detailed and technical work, covering a far wider field of science. Dr. McCook's is perhaps the more popular as a whole, although much of Professor Wheeler's book is well adapted for general reading.

The excellency of Professor Wheeler's book, which differentiates it from other publications on myrmecology, lies in the fact that it gives within the compass of one volume a full and thoroughly scientific study of the entire field. Its contents do not betray its title: "Ants, their Structure, Development and Behavior." Moreover, it abounds in new facts in ant life, which are virtually inaccessible to any but the specialist.

Professor Wheeler's "Ants" is illustrated with a fulness that at once attracts attention. There are 279 cuts, some of them full-page and many having several figures therein. The section which treats of the external and internal structure of ants is particularly rich.

The photographic reproductions have an especial interest, as they give us glimpses of the ants and their actions as they appeared to the observer himself. The bibliography of the book is in itself a vast achievement, covering apparently everything that has been written upon ants in all modern languages. No scientific author with whom we are acquainted has given quite so extensive a collection of the literature of any single subject.

One would suppose that in a volume of this size (663 pages), the author had exhausted his subject, or at least his own energy. But he promises soon to publish a monograph on the systematic classification of American ants. This will meet a much-felt want among entomologists, and will enable students to know our native ants without recourse to the scattered and often meagre and inadequate descriptions that have served as the taxonomy of North American species.

"Soils and Manures," by J. Alan Murray (Westminster Series, D. Van Nostrand Company), is not a book for the average farmer. It is intended for those with at least a rudimentary knowledge of chemistry, and is in general more theoretic than practical, the reader frequently being left to make his own application of the principles stated. The book is English, and while agreeing in the main with recent American research, deals mostly with English conditions and trade products. We should like to know more of nitrolim, a new compound which, already in wide use in England, has scarcely been introduced here. It is apparently a valuable fertilizer. The book is very thorough and complete, and will be helpful to those who, having the necessary knowledge of chemistry, wish to study the bases of the science of farming.

The Blue Hill Meteorological Observatory, founded in 1885 by A. Lawrence Rotch, and maintained by him now for a quarter of a century, was the pioneer in many valuable types of meteorological study. One of the first stations in the United States to be equipped with self-recording instruments, it is one of only a few in the world to-day where virtually every element is continuously recorded. At no other station has the upper and lower air been studied so long. Among Mr. Rotch's assistants have been W. P. Gerrish, S. P. Fergusson, H. H. Clayton, A. E. Sweetland, and A. E. Wells. The last is still at the observatory, and he and Mr. Fergusson and A. H. Palmer are the present assistants. Local weather prediction was soon inaugurated, and kept up until, in 1891, the United States Weather Bureau began similar forecasts at Boston. Metric units and the international form of publication were first used in this country at Blue Hill; and the earliest measures in America of the height and velocity of clouds by trigonometry and other methods were made there, in 1890-91, and in 1896-97 were repeated, as part of an international system. The first application of kites, carrying instruments to record graphically and continuously meteorological conditions of the upper air, was

made at Blue Hill. These observations brought much fame to the observatory, as well as the subsequent use of cellular kites flown with steel wire and controlled by an original power windlass. This device was afterward adopted by the United States Weather Bureau, as well as by many foreign stations. Researches at high air elevations over the ocean have been made with much success by Mr. Rotch, one noteworthy expedition to equatorial regions being made in conjunction with M. Teisserenc de Bort, from which resulted much new knowledge of clouds, temperatures, and trade winds. Kite flights are made each month at Blue Hill. Free balloons carrying automatic instruments were employed in this country for the first time by Dr. Rotch during the exposition at St. Louis. In that year and the three following, seventy-six balloons were sent up, and of these seventy-two were recovered. Sometimes their flights have taken them ten miles above the earth, and once a temperature of 111 degrees Fahrenheit below zero was recorded, one of the lowest natural temperatures ever recorded or observed. Such observations, now conducted at many stations throughout the world, are not only of much scientific value, but have an important bearing on aerial navigation. Twenty-five years' homogeneous observations of all the meteorological elements comprise a unique series in America, which it is to be hoped may be continued for many quarter centuries to come.

Drama.

Shakespeare's Roman Plays and Their Background. By M. W. MacCallum. New York: The Macmillan Co. \$3 net.

Shakespearean criticism has all too frequently fallen into one of two classes: either the impressionistic sort, sometimes brilliantly suggestive but often including inferences in no way warranted by the text; or criticism so severely accurate and cautious that it fails to reflect Shakespeare's range of imagination and great knowledge of human nature. The latter kind, especially, which prevails for the most part to-day, no one cares wantonly to depreciate. For the past half-century scholars have been laboring steadfastly to win back Shakespeare's own point of view. History, literary history, biography, theology, politics, dramatic technique have all been drawn upon to reconstruct the conditions under which he wrote. The harvest truly has been plentiful, nor have the laborers been few.

The net result of such scholarship, however, has been somewhat disappointing. For Shakespeare has been nailed in the process rather too tightly to his own times; his indebtedness to others and his conformity to the dramatic fashions of that day have in general been allowed to overshadow the transcendent part of him, his genius. There seldom seems room for a study of both, even in the writings of mature, noted scholars:

once the magnificent critical apparatus is installed, there is space for but one or two safe shivers of delight at Shakespeare's growing power—always growing, never grown! Meanwhile the uninitiated continue to ask themselves, What was the happy combination of qualities which could create a Juliet, a Desdemona, a Lear, who are so different from characters of other dramas? Whence has come the dignity of a Shakespearean villain or fool? Why Shakespeare's great assurance in handling the improbable? And was his imagination the sort to make for realism in any age?

Fortunately, the way has recently been pointed to this larger kind of criticism, notably by Prof. A. C. Bradley in his book on the four great tragedies, which appeared a few years ago, and now again by the author of the work here to be noticed. Both men employ much the same method, and achieve results of almost equal merit. Both square their utterances relentlessly to the actual text before them, make use of the great, various mass of critical investigation, and yet, unbewildered, interpret with far-reaching imagination. Professor MacCallum's work forms a worthy companion-volume to its distinguished predecessor.

The book opens with an elaborate introduction dealing (1) with Roman plays, outside of Shakespeare, in the sixteenth century, especially with the French Senecans. In the presence of parallel passages the author refuses to become giddy, and concludes that, "the grounds for believing that Shakespeare was influenced by Garnier's 'Marc Antoine' are very slight; for believing that he was influenced by Daniel's 'Cleopatra' are somewhat stronger; that he was influenced by Garnier's 'Cornélie' are stronger still; but they are even at the best precarious." (2) A brief but precise chapter compares Shakespeare's treatment of history with that of several other playwrights, including Schiller, Swinburne, and Tennyson. (3) There is a careful study of Plutarch, Amyot, and North, containing, incidentally, the decision that Amyot translated from the Greek and not from any intermediary Latin version. After such preparation the reader is ready for the thoroughgoing interpretation which follows.

Here, in the main portion of the book, as elsewhere, Professor MacCallum displays great learning and an almost perfect assimilation of this learning. So well has he mastered the sources of these plays and the surrounding dramatic conditions that he gives the impression of being able to follow and to present Shakespeare's actual method of selection and re-creation. In addition, he brings to his work a remarkable knowledge of life, which time and again assists him with reference to perplexed situations.

The results of such an outlook are manifold, though difficult to illustrate in detail. Chief among them is perhaps the writer's insistence on the fact that Shakespeare rarely if ever is so enslaved either to his sources or to the dramatic conventions of his day as to present characters who are not human. A case in point, and an interesting one considering certain recent publications,* is Professor MacCallum's interpretation of Julius Caesar. His words will bear quoting at length:

The Caesar, the first of those Caesars who were to receive their apotheosis and be hailed as *Divi Augusti*, must in literal truth answer Hobbes's description of the state, and be a mortal god. He must be fearless, omniscient, infallible, without changeableness or shadow of turning: does he not represent the empire? He has to live up to an impossible standard, and so he must affect to be what he is not. He is the martyr of the idea that has made his fortune. He must not listen to his instincts or his misgivings; there is no room in the Caesar for timidity or mistake or fickleness. But, alas! he is only a man, and as a man he constantly gives the lie to the majesty which the spirit of Caesar enjoins. We feel all the more strongly, since we are forced to the comparison, the contrast between the shortcomings of the individual and the splendor of the ideal rôle he undertakes. And not only that. In this assumption of the Divine, involving, as it does, a touch of unreality and falsehood, he has lost his old surety of vision and efficiency in act. He tries to rise above himself, and pays the penalty by falling below himself, and rushing on the ruin which a little vulgar shrewdness would have avoided. But his mistake is due to his very greatness, and his greatness encompasses him to the last, when, with no futile and undignified struggle, he wraps his face in his mantle and accepts the end.

In some respects the most successful chapters in the book are those on "Antony and Cleopatra." Every one has felt the splendor and despair of the world of these two lovers; but few, we believe, have felt with the articulate precision of Professor MacCallum its subtly shifting atmosphere and the almost convincing appeals of its myriad moments. He is always judicial, too, even when his sympathy is quickest. One would like, if space permitted, to quote from the author's estimate of the difficult character of Coriolanus, with which the book concludes; for it bears strong witness to the accuracy of Shakespeare's psychology, and to the author's own flexible learning.

*See the letter in the *Nation* of June 2 by Lisl Cipriani, attributing indebtedness by Shakespeare to the "Cesare" of Orlando Pescetti, and the replies to this letter in the following number. Also the interesting article in the current number of *The Publications of the Modern Language Association* on "Julius Caesar" by H. M. Ayres, in which it is reasonably shown that Shakespeare probably got the initial cue for his conception of Caesar from the Herculean Caesar of several Senecan dramas, who was so well known as to be an almost necessary convention.