

SCIENCE

A WEEKLY JOURNAL DEVOTED TO THE ADVANCEMENT OF SCIENCE, PUBLISHING THE
OFFICIAL NOTICES AND PROCEEDINGS OF THE AMERICAN ASSOCIATION
FOR THE ADVANCEMENT OF SCIENCE.

FRIDAY, APRIL 13, 1906.

CONTENTS.

The Academic Career as affected by Administration: PROFESSOR JOSEPH JASTROW.... 561

Scientific Books:—

Merriman's Elements of Mechanics, James's Elements of the Kinematics of a Point and the Rational Mechanics of a Particle: PROFESSOR L. M. HOSKINS. *Patterson's The Other Side of Evolution:* PROFESSOR C. H. EIGENMANN 574

Societies and Academies:—

The Wisconsin Academy of Sciences, Arts and Letters: CHARLES E. ALLEN. *The Philosophical Society of Washington:* CHARLES K. WEAD. *The Oregon State Academy of Sciences:* PROFESSOR GEORGE E. COGHILL. *University of Colorado Scientific Society:* PROFESSOR FRANCIS RAMALEY 579

Discussion and Correspondence:—

Meteorite Shower at Modoc, Kansas: OLIVER C. FARRINGTON. *Capture of the West Indian Seal at Key West, Florida:* DR. C. H. TOWNSEND. *On the Origin of the Small Mounds of the Lower Mississippi Valley and Texas:* P. J. FARNSWORTH..... 582

Special Articles:—

The Fish Genus Alabes or Cheilobranchus: DR. THEO. GILL. *The Functions of the Fins of Fishes:* PROFESSOR RAYMOND C. OSBURN. *Columbia Field Work in 1905, Intercollegiate Field Courses in Geology:* THOMAS C. BROWN. *The Embryogeny of Symplocarpus Foetidus Salisb.:* C. OTTO ROSENDAHL. *Lower Paleozoic Formations in New Mexico:* C. H. GORDON, L. C. GRATON. *A New Method for the Homoplastic Transplantation of the Ovary:* ALEXIS CARREL and C. C. GUTHRIE..... 584

Current Notes on Meteorology:—

Annals of Mont Blanc Observatory; Meteorologische Zeitschrift; Forests and Rainfall; Notes: PROFESSOR R. DEC. WARD 592

Carbon Suboxide: DR. J. BISHOP TINGLE.... 593

Analysis of the Results of the Twelfth Census 594

Awards of the Royal Geographical Society.. 594

The Congress of the United States..... 595

The Ohio State University..... 596

The Installation of President Houston..... 596

The American Philosophical Society..... 597

Scientific Notes and News..... 598

University and Educational News..... 600

MSS. intended for publication and books, etc., intended for review should be sent to the Editor of SCIENCE, Garrison-on-Hudson, N. Y.

THE ACADEMIC CAREER AS AFFECTED BY ADMINISTRATION.¹

It is my purpose to discuss, in accordance with the central theme of this conference, the influences exerted upon the academic career by the present administrative conduct of university affairs. Whether or not we are prepared to admit that whatever is best administered is best, it seems both fair and profitable to judge the value of admini-

¹In view of the appearance in SCIENCE of Professor Cattell's proposals for university organization, I have decided to avail myself of the wider publicity for my own treatment of a related issue. My presentation, in common with that of Mr. Munroe (SCIENCE, December 29, 1905) was read before the Trustees' Conference held at the University of Illinois in October, 1905. My personal judgment endorses the complete reconstructive plan that Professor Cattell proposes; I have, however, confined my constructive suggestions to two urgent but simple measures that may be looked upon as the minimum step in the 'gradual evolution' by which the comprehensive plan is to be established. The public discussion of this problem and the indication of the defective status of university organization and tendencies, are in themselves decided gains in shaping opinion. The danger to the academic career seems to me the most serious menace. Any steps taken for the relief of this situation will most directly further the cultural interests of the nation.

strative provisions by the success with which they further the vital ends to which they are but means. Clearly the administration of a university is no end in itself, but only a subordinate contributory measure for advancing the real interest of the higher education. Boards of trustees, and presidents, and deans, and committees would be only a hindrance and not in the least a help to the cause for which universities exist, if these offices could not justify their existence and the methods of their maintenance by their furtherance of worthy educational ideals. Altogether too long has there prevailed alike an unquestioned assumption that such is the case, and—still more unfortunately—a timid suppression or impatient frowning down of any questioning in regard thereto.

It would be desirable, but may not be practicable, to consider in an historical temper, how American conditions have developed a distinctive scheme of university administration—a system that departs from the models of the old world in a direction peculiarly incompatible with our national ideals and principles. To say that the government of our universities is undemocratic may be no fatal condemnation; but it indicates a singular departure from the spirit that animates many of our formal administrative measures even outside of the political field. The situation, moreover, is the more notable because foreign universities in pronounced aristocratic countries offer the contrast of placing the welfare of the cultural and academic life—the authority as well as the responsibility—upon those whose life-work is bound up with and furthered by such institutions, and of thus adopting for monarchical universities a thoroughly democratic form of government. President Pritchett's review of this and allied situations² may be cordially commended. He does not hesitate to

say that our autocratic methods of university management would be nothing less than intolerable to the German scholar, while emphasizing that the German method is precisely what the spirit of our institutions would presumably favor. This inconsistency of university government with the national ideals which university teaching is called upon to foster is certainly significant.

It needs no discernment to discover that the actual and authoritative government of our colleges and universities does not rest with the faculties thereof; it rests with the president and the board of trustees or regents. In spite of the diversity of practice, the distribution of authority has unmistakably emphasized, and increasingly so, the importance of the presidential office and the regulative function of the board, and has given to the faculty a less and less influential voice in the actual direction of affairs, in the initiative of educational expansion and in the shaping and control of the academic career. The central question that can not and should not be longer avoided, but which should be asked in a perfectly amicable, thoroughly helpful, wholly impartial temper, is whether present arrangements are to be approved and gradually improved; or whether they are to be regarded as fundamentally unfortunate, as something of a menace to the security of our educational future. If any profit is to come from the discussion, the same frankness that approaches so serious a question with honest doubt, but without timidity, must be adopted both by those who uphold and by those who oppose the spirit and issues of actual institutions. In this spirit I place myself with those who look with alarm upon the further growth of present-day tendencies, and who believe that both logic and policy point to an administration of university affairs that shall be based upon a different emphasis of

² *Atlantic Monthly*, September, 1905.

principles, upon a different administrative temper.

Doubtless many of the conditions, both favorable and unfavorable, have grown up in very indirect connection with any well-matured policy. They have taken shape rather by the stress of circumstance, by provisional expediency, by the necessity of advancing as one could if one were to advance at all; and this fact offers not only a large measure of excuse for existing deficiencies, but also lightens the task of those who question whether future wisdom lies where the prudent compromise of the past has directed. I repeat, then, that the fundamental standard by which administrative means are to be judged is that of meeting the cultural ends for which universities are called into being. And with equal confidence it is urged that those whose training and talents and purposes in life are concerned professionally with these cultural ends are best fitted and most justly entitled to the shaping of the policy and the practical direction of affairs of the institutions whose guidance is an intimate part of their lives. The appeal of these principles to the judgment of those either conversant with or appreciative of matters intellectual, seems to me so overwhelmingly strong, that the mere placing of them in this fundamental formative position is adequate to command general assent.

The practical interests transfer the discussion to the limitations and possible dangers of too formal a following of this doctrine. For above all, the situation is a practical one; here, as elsewhere, a condition confronts us, but also here, as elsewhere, a condition that derives illumination from the application thereto of an appropriate theory. American conditions, as they affect universities, are so complex, so unprecedented and so entirely unprovided for by governmental or other regulations, that we must solve the problems of their

maintenance more independently than would be the case in older communities. It has been our national fate to be called upon to feel our way by practical wisdom, often by a hand-to-mouth policy, with justifiable satisfaction at the notable achievements that followed so closely upon the remoteness from opportunity of the pioneer. This intensely practical development found natural expression in assigning the management of academic, as of all other public concerns, particularly as matters of finance, to a non-professional body of citizens; and to this body has been given the largest authority and indirectly a peculiarly formidable control of the entire university interests. That this control has in the past been variously unfortunate is not a point upon which I wish to dwell. Let the past stand as it is, and serve its worthiest purpose in warning against the dangers of the future. The practical issue arises not so much from the constituted authority as from the mode of using it. Here is the nub of the whole matter; and here some measure of human psychology enters.

It seems difficult for our civilization to foster the type of man who has authority, but finds the highest use of this possession in the restraint thereof, holding it in check for an emergency. Why have authority if not to exercise it freely and conspicuously, even to the show of power for the sake of showing power! Other ways may be better; but what we say 'goes,' as the phrase of the street has it. Naturally such an impulse can find consoling excuse for its distrust to yield to others any share of vested authority, can readily overlook that not the statutory provisions, but the spirit in which they are carried out, forms the essence of all that is writ in the laws and the prophets. It is possibly because this quality of human nature—for which the American idiom has evolved the term 'boss'—is less pronounced in the academic man than in

almost any other, that he finds it difficult to realize how vitally it affects the motives and actions of men devoted to other affairs. I confess that I found incomprehensible the declaration of one whose character commands my admiration, that he would far prefer to be mayor of Chicago than President of the United States; and for no other reason than that the exercise of the personal power of which the former officer disposes, would furnish him with the keenest satisfaction, with the most deeply felt tribute to his own success. That such type of man possesses many qualities of great value must be admitted; but such qualities are in no situation less appropriate than in the governing boards of universities. There, if anywhere, is needed one who finds within him no impulse to use power wantonly, no tendency to control where cooperation alone is desired, to interpret his office in any other spirit than of determining, with generous confidence in expert opinion, what ends are most to be desired, and of using his practical wisdom in aiding the purposes of the common cause. As the national experiments in benevolent assimilation have been more notable for the success of the latter than of the former quality, so has the trustees' interpretation of cooperative control emphasized the latter to the disparagement of the former element. That the correction for this tendency lies neither in the abolition of boards of trustees, nor necessarily in their reconstruction, but only in the transformation of the policy by which the division of authority between them and the faculty shall be regulated, will appear in due course.

Let us remain a moment longer with the bare description of things as they are.*

*I must here intrude a word of explanation. My task requires that I speak frankly of existing conditions; and were any one disposed to misinterpret the spirit in which that is done, personal considerations and the reference to particular men

The *status quo*, summarily exhibited, recites that the board and the president dispose of many, most or all of the measures that affect in any decisive manner the growth and official welfare of the university, and that affect the personal and professional welfare of the professor. The board in framing its edicts looks to the president as the source of initiative; sets great store by the president's approval; follows his lead in determining academic sentiment or university needs; awards medals of gold or silver or bronze, or dismisses with honorable mention or without it, in accordance with his verdicts; decides what shall be done first and what last and what not at all, largely according to his judgment or preferences. In all this it depends, as a rule, wholly upon the temperament of the president whether he consults or does not consult faculty opinion. His measures may, and most of them do, go directly to the board; they are announced

or institutions might be read into a discussion in which they have no place. I shall offer no affront to any who may be interested in what I have to say by implying any such misconstruction. The discussion will be maintained upon a wholly objective basis. As is regarded as proper in speaking of the dead, I shall refer to no particular institution except to praise it. Yet I would not have it said that I am speaking of imaginary or exaggerated conditions, not of real ones. I have constantly in mind actual conditions in definite institutions; I find it necessary to exercise caution not to refer to them so definitely that their identity will be surmised. A deliberately cultivated acquaintance with many members of many faculties, a considerable range of earnest and confidential discussion of actual conditions are the basis of my observation. My observations may be faulty; but they are free, they are honestly acquired and have been slowly matured. Some may be inclined to consider the conditions overdrawn, because they have in mind the few most exceptional universities in which the spirit of administration is far more favorable than I picture it. It is the average, not the exceptionally best, that counts in this discussion; and it is the average to which I address myself.

by the president to the faculty as final decisions; and the faculty is called upon to carry out the decision in reaching which they have had no part. Officially and authoritatively, the faculty enjoys—as one is said to enjoy bad health—painfully restricted rights. Its members naturally make their influence felt through unofficial, mainly individual, prestige. Yet in many academic autocracies, the president would look askance upon the direct conference of a member of the faculty with a member of the board, especially to urge views opposed to his own. This is the situation stated in its mildest, most objective terms. Introduce a tactful, sympathetic personality, and the even tenor of academic life is likely to proceed with reasonable serenity. Many colleges—particularly the smaller ones, with simpler problems, more unified interests—will be happily governed by any system and under such leadership as they are likely to accept. But surround the situation with the actual complexities of a great and expanding university, and inject into this relation what the gods occasionally or oftener give unto masterful men—personal ambition, a secretive habit of mind, a protective insensibility, a pseudo-diplomatic behavior, and the love of power that seems to come with the executive title—and you have a situation that may vary from the ridiculously irritating to the sublimely intolerable.

I am tempted to refer, though maintaining the incognito, to a recent experience. A member of a faculty propounded to me the attitude of its president as a psychological problem. I was unable to give any enlightenment, but this is the enlightenment that I received, the result of a careful inductive study. (1) Whenever President X. announced to his surprised faculty that the *board* had adopted such and such a measure, it proved to mean that

the president had proposed the measure to the wholly innocent board, and that it was a measure that the faculty, were it given a chance, would have cordially opposed. (2) When a measure was 'up' before the faculty, and opposition unexpectedly developed, an announcement was made by President X. that there were reasons, which unfortunately he could not disclose, that really made the measure necessary, and this meant that if not approved by the faculty, the board would take the proposed step anyway. There were two other types of situations that entered into this psychological analysis; but they are too individual to make it proper to cite them.

The academic comment that occasionally reaches the college president's ears to the effect that his troubles are largely of his own making is intended to remind him that he encourages, or complacently accepts, does not, at all events, protest against and strive for the abolition of the conditions out of which troubles naturally grow. When the presidential policy, or better, the university policy, shall favor the settlement of intrinsically educational questions by the faculty and not for the faculty, the president's lot will be a happier one. The principle that the essential questions, the critically formative and expanding measures, the issues that make or mar the academic career, shall be shaped by faculty consideration, equally demands that they shall not be authoritatively or virtually disposed either by the board or by the president. As to the actual business of the faculty: it is a rather dreary tale. Details, routine, student affairs, occasionally a real issue that somehow reaches that body, but in regard to which they can act only conditionally, not authoritatively; such is the situation that naturally encourages inconsequential talk, inefficient deliberation, restrained initiative. It is nothing short of absurd to withdraw from

faculty discussion all the real educational issues, and expect a company of scholarly men to grow enthusiastic over the privilege of wearily debating how a sophomoric attempt to vault over or climb around the regulations shall be thwarted, or whether the mandolin club both played and behaved so badly upon its last venture that its leading strings should profitably be shortened. One can comfortably resign oneself to picking the bones when one has dined off the fowl, but to have the bird presented after it has been shorn of its attractions at the first table makes a sorry feast.

At this stage we must examine with the practical purpose of this discussion, the types of questions and interests that require consideration in university affairs. There is first the appointment of the instructional staff. In this respect enlightened opinion has accomplished a notable success. In the best type of universities, those most closely concerned have adequate means of making their opinion effective; the president and the board take those executive and formal steps that lead to the election of the candidate and adjudicate where some final authority must assume responsibility. Where this is not the case, the tendency is at least favorable to such a consummation; though abuses of privilege are by no means obsolete. Yet the fact that this phase of the situation has approached a most commendable status should be as frankly emphasized as other less satisfactory phases should be frankly condemned. In principle many prefer the practise of Yale University, in which such nominations are presented for the approval of the faculty. With the proper spirit the essential ends are accomplished by either procedure.

When we come, secondly, to the matter of promotions and salaries, the situation acquires a somber cast. In some few institutions the methods, though not perfectly

so, are commendable, in many others moderately perverse, in the rest intolerable. Merely because that is another story, yet a closely related one, do I reluctantly pass by the burning question of the inadequacy of professors' incomes. I content myself with the expression that were those salaries as nearly adequate as they could readily become were sentiment properly effective, certain of the administrative problems would find readier solution; yet in saying this I wish also to emphasize the converse: that were our administrative provisions more suitable, the professor's financial status would have been far more favorable than it now is—and of this more anon. That there obtain widely different opinions as to what a professor should be paid is inevitable; that there should prevail such general misconception as to what influences should determine his compensation, is not inevitable, only unfortunate. This text, also, I must not allow myself to elaborate, though there is strong temptation to do so.

As an administrative policy, the salary problems should be and in large measure can be solved by preventing them from arising. Policy is here all important. With many others, I hold as desirable above all other arrangements, an effective provision that shall pledge a definite and dependable living for worthy service. This would go far towards avoiding the constant and irritating perplexities that from time to time, and in some institutions at the close of each academic year, present themselves with threatening features to be somehow appeased. A system of this general type is well established at Harvard University. What I emphasize as essential therein is that men are elected to positions of definite rank, for definite periods, with definite understandings. The central issue that is to be determined at the close of the period is whether the university desires to retain the services of the occupant; if so,

he steps to the next grade with constantly increasing salary. A normal line of advancement is thus provided. More rapid promotion is always open to promptly established worth and efficiency, and should indeed be the rule, not the exception. Such measure of elasticity the system designedly retains. There is always opportunity for any one to present such considerations as may be proper, and to reenforce them by such arguments as may be suitable, to urge promotion at such time and in such degree as the circumstances warrant. Speaking generally: for all whose fitness for the academic life has been established, the question of salary is as nearly as possible disposed of and advancement is secure. Such a system represents about as practicable a compromise between ideal and available measures as present circumstances permit. It has at all events the supreme advantage of minimizing, and in a fortunate environment, of avoiding wholly the endless disaffections and positive injuries that are inevitable when such matters depend wholly upon the decision of one or two men, whose natural inclination under present circumstances is only too likely to regard the salary item in the budget as the one that admittedly should be first, but is likely to come last. The administrative feeling creeps in or is openly defended, that so long as places can be filled, salaries are not the first consideration. It is this phase of the president's activity that estranges him from collegueship with his faculty.

How far down in the academic scale this system is applicable can not be determined offhand. Yet in the spirit of an institution in which such a system is liberally administered, it should be easy to place the greatest emphasis upon offering to the men of promise in the oncoming generation the utmost encouragement to rise rapidly in their profession; and to do this as is done

in all learned professions, by the judgment of their peers with reference to true academic standards. The point is important as indicating how one set of administrative measures largely avoids difficult and undesirable situations, that another deliberately invites. It is important that a living within the academic fold should not be regarded as a reward to be given to the exceptionally deserving, when circumstances indicate that the only method of retaining their services is to yield what for years has been unwisely and unjustly withheld; but is to be regarded as a natural privilege for all worthy of the academic life. There is not the slightest discrepancy in the inevitable fact that *A* and *B*, men of quite unequal merit and value to their institutions, should be enjoying the same incomes. There is nothing in the slightest degree disconcerting in so inevitable a consequence of human variability; and in a less commercially minded community, no one would think of remarking upon so obvious a situation. A man's academic worth should not and can not in the least be measured by his salary; and any attempt to do so is a deep injury to the profession. If some one has made a mistake in judgment in asking the wrong man to fill a chair, when better men were available, and if the mistake can not be remedied without repudiating obligations already incurred, it is far better to seek any solution of the situation than the one that sets the emphasis upon the very point that has no place in the academic life. Endowed professorships ensuring adequate livings are for this reason a far more ideal system than American circumstances make practicable.

I have thus dwelt upon the more serious of the unfortunate consequences of the dominant systemless practises in American institutions and of the possibilities of their correction. It is even more than a misfortune; it is indeed an indignity that a

scholar of tried worth and reputation—one who in another country would be an *homme arrivé*, with a secure living—should still find the very wherewithal of his sustenance, and the appraisal of his rank meted out to him by the uncertain esteem of one or two of his colleagues—for such the president and dean are—placed in a position of authority by reason of qualities unrelated to any such Jupiterian function. His helplessness in a situation for which inadequate administration or administrative autocracy has left no place for remedy, hardly even for protest, may well invite despair.

The disastrous consequences of this unfortunate situation appear most notably in the discordant notes that break into what remains of the cherished harmony of the academic spirit; and it appears in the loss of appeal of the academic career to those best fitted by endowments and interest to enter its ranks. The drift within the university is towards winning those marks of success upon which administrative dominance sets greatest store. Colleges engage in what the press is pleased to call a friendly rivalry to secure the largest crop of freshmen; and undue influences are set at work upon departments and professors to attract large classes. Facilitation of administrative measures and some practical executive efficiency are more apt to meet with tangible rewards than are more academic talents. It takes a sturdy determination, a sterling character and a large measure of actual sacrifice to withstand this manifold pressure. Those who resist it least, or are least sensitive to anything to be resisted, are likely to find themselves in the more prominent places; and so the unfortunate emphasis gathers strength by its own headway. The spirit of academic intercourse, the influence of individual character, the stamp of the dominant occupation, subtly yet inevitably lose their finer qualities. There comes to be

developed a type of academician (*sit venia verbo*) who pursues his career in a decidedly 'business' frame of mind. At the worst, he degenerates into a professorial *commis*, keen for the main chance, ready to advertise his wares and advance his trade, eager for new markets, a devotee to statistically measured success. At the best, he loses with advancing years that mellow ripening of the scholar, lays aside all too willingly the protecting ægis of his ideals and his enthusiasm, and fails to maintain in his activity the very vital quality that appreciative students should, and commonly do look upon, and look back upon, as the choicest advantage of their academic intercourse.

If any one consequence of this serious situation may be rated more serious than the rest, it is the effect of it all upon the younger members of the instructional staff during the most valued portions of their lives. A Teutonic student of our educational situation recently pointed out to me this disastrous phase of our unadjusted university arrangements as the most potent reason for our unproductiveness in original effort, and as the chief obstacle to our cultural advance. He contrasted the situation with that of the *Privat-docent*, who, though with most precarious income, found no hindrance, when once launched upon academic seas, to shaping his career according to his talents, in steering for such ports and by such routes as his survey of the chart directed. That intense and crippling sense of accountability—to which President Pritchett has likewise directed attention—is all but absent from the *Privat-docent's* career, as it is likely to crowd out by its insistent demands almost every other serious purpose of the young instructor. Confessedly the advantages are not all on one side; but the unnecessary hazards placed in the way of the academic aspirant among us, make

the academic career partake altogether too largely of the nature of an obstacle race.

I am aware that the objection may arise to the sombre tones of my petteite, that will protest that such a delineation is the natural result of viewing things through a murky atmosphere or through congenitally disposed obliquity of vision. The delusion is, however, a rather general one; the difficulty is only that it does not find public expression. It is in the confidential talk with others of kindred spirit and experience that a man's real opinions come to the fore. The front that he shows to the world—and that without any fair charge of hypocrisy—is wholly different from his private opinion for home consumption only. I have in mind a professor of national reputation, with a quarter century of successful experience in distinguished institutions of the land, with many honors to his name, and with many public addresses to his credit extolling the successes of American education. This scholar had no hesitation in admitting to me confidentially, that in any true sense, we had no universities in this country, and certainly no academic life; and that in his own career a larger measure of his success than he cared to reflect upon, was probably due to his yielding to influences that his ideals condemned. With not the slightest breach of honesty in his purpose as conceived by approved standards, but with the inevitable compromise to practical necessities, his career had deviated from what under more favorable conditions it might well have been. Such a man is not to be censured; he is the victim of an unfortunate situation; and it is only because such situations may in large measure be relieved by a proper administrative temper, that it becomes proper to cite the instance in this connection.

It is well to return to the practical aspect of the situation. What the average university presents in lieu of an academic provi-

sion is little more than a corporation of an industrial type, in which groups of men have been engaged to perform given tasks. The tasks are often liberally conceived, and personal worth properly regarded. Yet the temper is such that commercial considerations enter; and the tendency is rarely absent that makes the first duty of the management, that of securing the work done upon the most economical basis possible. The irrelevancy of this attitude is too complex a tale to attempt to disentangle here. Ideals and policy must come first; and practise can only be worthy when the motive force of such ideals can find expression. With the absence of the weakness of worthy ideals, lower ideals inevitably enter. In the present consideration it may be emphasized that a university can be built up about a group of professorships and about nothing else. Academic benefactors will not have accomplished their highest degree of efficiency, until they recognize in such endowments the most intrinsically valuable form of aiding universities. Whatever hastens the day of liberally provided professorships will ennoble and simplify the administrative problems of universities.

A further class of administrative measures relates to the direction of university growth, the nature of its extensions, the distinctive character of its purposes, its mode of meeting public needs. These questions are far more pressing in so rapidly developing a community as ours, than they are in older civilizations in which the purposes of university activity have become fixed by convention. It is in regard to this set of measures that the initiative is so commonly taken by the president alone; and it is precisely with regard to these that the principles to which I adhere, favor and demand a vital and authoritative consideration on the part of the faculty. It is because a portion of these measures must be determined by the provisions of the budget,

that to some extent the budget itself must be included in this group. As it is, faculty opinion has in most institutions no opportunity to express itself in regard to that which concerns the faculty most intimately. Upon this aspect of the matter I have touched in the general statement.

There is finally a group of minor administrative details, also involving financial matters, which intimately concern the academic activities. I refer to such matters as modes of conducting laboratories, of securing material and all the inevitable business of handling apparatus, and the house-keeping side of instructional and investigative work. This is clearly partly a business matter, and as such belongs to the board, but likewise is it in equal part a matter that affects the efficiency of the laboratory and its work. The contention thus seems just that some mode of administration shall be devised which shall be as satisfactory to the director of the laboratory in the matter of meeting his needs, as it shall be to the administration as business procedure. This, as many another question, is one that concerns jointly these two cooperating parts of university administration; and can be met only by joint consideration.

And now let us bring these various considerations into mutual relation. The system that so generally prevails and whose deficiencies detract from the value of the academic career may be called 'government by imposition.' Possibly this is a harsh word; but to the professor who is obliged to pursue his calling under it, the measures which it enforces are often harsh measures. The system which is advocated to replace it may in like brevity be termed 'government by cooperation,' with the explicit interpretation that the government is by the faculty and the cooperation the function of the administrative officers, including the president and the board. The management of the university's material affairs advantage-

ously falls to the board; and what shall be included under this head is not likely to be a serious point of contention, if once it be admitted that many material provisions directly influence the work of the faculty, and that for such the faculty shall have a voice in determining how these material affairs shall be administered. Assent must be gained for the view that the faculty is quite capable of determining whether the needs of the institution make it preferable to administer certain details themselves or have them otherwise regulated. So long as measures are not imposed, but are the issue of deliberation of both bodies acting co-operatively, concord and progress are assured. For the most part the material administration may well remain where it now is placed; but the right of discussion, of opinion and of protest should be freely exercised. Even with similar measures, the spirit of the administration and the dignity and security of the academic career, would be wholly different under the two systems.

To what measure the present system of administration is due to the irrelevant transfer of methods suited to a business corporation, to institutions flourishing under conditions of wholly opposed character, I can not stop to discuss. Many critics find in this perverse application of glorified business procedure the source of academic inadequacy; others count it as but one of several influences, and not the chief. What is unmistakable is the pernicious dominance of the business spirit both in the administration and in the academic interests. I prefer to speak of the internal influences as more closely allied to my thesis. There is at work among American universities a spirit of intense rivalry, a desire for each to measure its own work by standards of tangible material success. College presidents like to be remembered by the buildings which were erected through their initiative, by the departments which have been

added, and the enrollment which has been increased. It is by urging these needs and presenting these successes that funds are secured. If such were really the standard by which educational ends are to be appraised, then the business methods might well be adapted to university affairs. It is against this false standard that the warfare must be actively directed. It would undoubtedly be the most beneficial fate that could happen to many of our universities to-day, if for a considerable period they built no new buildings, added no new departments, found their enrollment gradually decreasing and centered all their energies upon the internal elevation of true university ends, upon providing, for student and professor alike, the intellectual environment in which those interests thrive, for which student and professor come together, by which the academic ideal is inspired.

The same spirit is felt throughout every detail of university life, from athletics up or down as our standards may be. It tempts the professor to spend his energies in securing large classes; it sets departments to devising means to outrank in numbers the devotees of other departments; it makes the student feel that he is conferring a favor upon the university by coming, and then upon the professor, by choosing his classes; it leads the administration to value the professor's services by his talents in these directions, to appraise executive work, at least financially, far more highly than professorial service; and, worst of all, it contaminates the academic atmosphere so that all life and inspiration go out of it, or would, if the professor's ideals did not serve as a protecting ægis to resist, often with much personal sacrifice, these untoward influences.

In bringing these considerations to a close, I must first defend my position against certain objections that are appar-

ent, and then focus the discussion upon the remedial aspect of the situation. I am confident that I do not undervalue the services that have been done for American education by the very types of administration against which I protest. A strong case may be made out for the opinion that for the work that had to be done and the conditions that obtained, it was the only method available and a good one. My face is turned to the future; and the recognition of past achievement and fitness is no token of increasing service under more developed conditions. The general advantages of the presidential form of government are equally obvious. The cause and the strength, I can not bring myself to say the justification, of the conditions which with so many others I deplore, are not far to seek. Those who defend present academic arrangements bring forward pertinent considerations, to which any one approaching the issues in a practical temper will give due weight. The advantages of centralized power will not lightly be set aside; nor is there any reason for losing the most essential of them in such reconstruction as is needed to rehabilitate the academic career. We need not repeat the common educational mistake, so neatly pictured in the German phrase, of tumbling out the child with the bath. Wisdom as well as sanity is the name for a certain perspective of values. In company with those who share the attitude of my protest, I am keenly sensitive to the obligations that our educational welfare has incurred to the very offices whose policy and activity I cite as but slightly commendable. I am calling attention to the fact that these pearls of price will have been too dearly bought, if they lead to the deterioration of the academic career through loss of dignity and attractiveness to those to whom they should make the worthiest appeal. The very qualities upon which emphasis is laid bring types of

men into high office and into the academic chairs who have not within them the possibilities that contribute to the inspiration of the institution of which they become an organic part. Confining the issue to the administrative aspect only, I am content to repeat the comment of one of the speakers of this conference, whose point of view is hardly likely to be regarded as prejudiced. He tells us that 'Young men of power and ambition scorn what should be reckoned the noblest of professions, not because that profession condemns them to poverty, but because it dooms them to a sort of servitude.' And as a forecast of the future in the light of the present, this:

Unless American college teachers can be assured . . . that they are no longer to be looked upon as mere employees paid to do the bidding of men who, however courteous or however eminent, have not the faculty's professional knowledge of the complicated problems of education, our universities will suffer increasingly from a dearth of strong men, and teaching will remain outside the pale of the really learned professions. . . . The problem is not one of wages; for no university can become rich enough to buy the independence of any man who is really worth purchasing.

A situation that calls forth such earnest, disinterested protest can not but be somber in tone. Yet I am anxious to reveal the touch of optimism that makes the world akin, and record that the brighter colors have as legitimate a place in academic portraiture as my enforced selection for this occasion of the neutral and the darker grays. The compensations of the academic life are real enough: they simply form, like much else that I have omitted, another story. I should be sorry to have it inferred that a happy academician must be sought by the despairing light of a Diogenes lantern; though I have implied that in one's less hopeful moods, the lamp of learning seems a precarious illumination amid the blinding incandescence of the

rival interests of our intensely modern life. The devotion to the purer, more sensitive flame is in fact endangered; and those whose responsibility and consolation it is to hand it on to others with undiminished ardor, have cause to feel that their vocation is shorn of favoring fortune, is beset by lack of power to order their lives by appropriate standards, is embarrassed by needless and remediable adversities.

I must also forestall the deduction, which would be quite wide of my purpose, that I am in any sense advocating the abolition of presidencies and boards, and am proposing measures far too radical to be practicable. On the contrary, I concede that the present mode of administration, if it can be freed, as there is good reason to believe it can, from the spirit of its practise that now seems dominant, is a very efficient and commendable method of accomplishing a purpose which from the outset has been set forth as a subsidiary means to an end. If it furthers that end, it would in my judgment hardly be worth while to change it, even if that were readily possible. If the present *spirit* of administration is the inevitable result of the present *method*, then the method can not be commended, however modified. Here the ways divide; and the judgment of expediency has a more commanding voice, which it should not raise, however, in defiance of principle.

It would be possible to frame an academic decalogue, the obedience to which, though it would not ensure the realization of all ideals, would guard against the more obvious transgressions. I shall content myself with suggesting but two of the provisions. The first is the introduction of a definite system of salaries with such liberality as may be possible, that provides for promotions and increases, and establishes the academic applicant upon a definite footing. This measure is not proposed as a panacea, and can at best be but negatively

effective. Yet it has great positive value under present circumstances, for the reason that only when this phase of the matter is disposed of, is it possible satisfactorily to consider other weighty issues. It is most unfortunate that this financial aspect must be placed so prominently in present discussions; for such prominence but enforces the inadequacy of the academic situation. It would, however, be foolish to disregard this irritating stumbling-block, which must be removed if academic freedom is to be maintained. The professor desires money in order that money considerations may not enter disturbingly into his life; and universities should once for all determine matters of salary, in order that their energies may be more profitably expended.

The second provision is that no measure shall be decided by the president or the board without giving the faculty an opportunity to decide whether it cares to express itself upon that measure or not. Such provision inevitably carries with it the right to have a share in deciding in the first place what division of questions shall be made between faculty and board. To accomplish this end, an advisory committee of the faculty seems an efficient means. Such committee should decide in each case whether and how far questions should be considered by the faculty; and naturally the president, as a member of such a committee, will bring before it first and for approval all measures that he regards as worthy of the attention of the board. An arrangement of this type is in force in Leland Stanford University. With slight change in the apportionment of the present authority, such a measure will be adequate to bring to the faculty a voice on all questions upon which, in its own judgment, its expression of opinion would be for the best interests of the university. Such committee would attend the meetings of the

board and participate in its discussions, though without right of vote. The president would serve as the formal spokesman of the faculty influence, and could then be, what it should be his highest ambition to be, the leader, not the governor of the faculty, and a defender of the academic life.

I have no desire to lay minute stress upon particular remedies, which must always take their shape from local conditions, though in still larger measure must they be framed by ideals and purposes, that are much the same wherever the academic spirit is cherished. I desire only to remove the objection that practical measures to remove difficulties can not be readily devised. I know very well that changes of ideals and purposes must first inspire confidence and enthusiasm before they reach practical possibilities; but I am encouraged by the example of so many other educational and national evils, that, once clearly recognized, have in astonishingly brief time been swept away by the strenuous purpose of the national temper. It is in such a movement that the present discussion would find the most desirable consummation.

I am fully aware that no such administrative reform is to be looked for until the ambitions that universities and particularly their presidents cherish, are considerably altered. When internal cultural measures are acknowledged to be the leading issues of the academic life, it will fall more and more to the faculty to carry them out; there will be less and less need of the present type of president, less temptation to develop the office primarily for those functions which it now serves. The type of individual that will then be sought for the position will be selected by a different perspective of considerations; and the academic career will have greater promise of reaching a worthier status than it now

occupies. First as last, it is directly through ideals and indirectly through administrative provisions that further ideals, that the welfare of academic concerns is determined.

JOSEPH JASTROW.

UNIVERSITY OF WISCONSIN.

SCIENTIFIC BOOKS.

Elements of Mechanics; Forty Lessons for Beginners in Engineering. By MANSFIELD MERRIMAN, Professor of Civil Engineering in Lehigh University. New York, John Wiley and Sons. 1905.

Elements of the Kinematics of a Point and the Rational Mechanics of a Particle. By G. O. JAMES, Ph.D., Instructor in Mathematics and Astronomy, Washington University.

Professor Merriman believes that "there should be given in every engineering college two courses in rational mechanics, an elementary one during the freshman year in which only as much mathematics is employed as is indispensably necessary, and an advanced one after the completion of the course in calculus." The forty lessons contained in this book on the 'Elements of Mechanics' are intended to cover the suggested elementary course. Its seven chapters are entitled Concurrent Forces, Parallel Forces, Center of Gravity, Resistance and Work, Simple Machines, Gravitation and Motion, Inertia and Rotation. The treatment of these topics is characterized by the simplicity of statement and illustration which are familiar to users of the author's numerous other text-books for students of engineering. His aim seems to be to give the student working rules in the quickest and most direct manner, and to this end strict logical rigor and accuracy of definition and statement are sometimes sacrificed.

There is no formal statement of the laws of motion in their ordinary form, but ten 'axioms' are given which presumably are designed to appeal more directly to the experience of the beginner. It is to be feared that certain of these are stated with too little care as regards accuracy (for example, 'when

only one force acts upon a body it moves in a straight line in the direction of that force'), and that others will be found too vague to be of much service. This vagueness is due in part to the failure to give definiteness to the conception of force. No student can think clearly and correctly about force until he has grasped the elementary notion that every force is exerted *by* one body or portion of matter *upon* another, and that a force exerted by *A* upon *B* is always accompanied by an equal and opposite force exerted by *B* upon *A*, the two forces constituting the action and reaction of Newton's third law. This fundamental principle is not expressed nor even implied in the ten axioms given in this book; on the contrary, the author's explanation of his third axiom involves a wholly erroneous statement of the law of action and reaction.

It is, however, to the practically minded student rather than to the stickler for logical rigor that Professor Merriman addresses himself primarily, and from his point of view such defects as are here criticized are of minor importance in comparison with simplicity and directness in the presentation of working rules. With this point of view many teachers of mathematical subjects to students of engineering will largely sympathize, and they will find in this book the merits which are conspicuous in the author's previous text-books. Not the least of these merits is the large number of examples, mostly numerical, to be solved by the student.

The book of Dr. James is designed as an introductory course in rational mechanics, but it is addressed not to students of engineering but to those whose interest is in pure science. It contains little of application, but aims at a rigorous and thoroughly sound formulation of fundamental principles.

The treatment of kinematics, which occupies Part I., is clear and concise throughout. This conciseness is aided by the free use of the notions and language of vectors, especially the notion of the geometric time-derivative in the treatment of curvilinear motion. The use of the term displacement to designate the position-vector of a moving particle seems, however, singularly inappropriate.