weather being extremely bad, the party remained for thirty-five hours without food under the shelter of a rock. Too exhausted to proceed, the explorers killed their dog and were about to eat the flesh when they saw a sailing boat on the fiord east of Proeven (near Upernivik in latitude 72° N.). By means of shots and signals they were able to attract the attention of those on board, by whom they were taken to Proeven. The expedition met one misfortune after another, and that the leaders under all discouragements pushed the undertaking through along original lines supplies a most remarkable record of courage, persistence and endurance. Some of their horses escaped, Dr. Wegener had the misfortune to break a rib and Captain Koch a leg which kept him in bed for three months. They started out upon the crossing on April 20, but their progress was much impeded by powerful westerly winds and driven snow which caused the pack horses much suffering. The last nunatak (rock island within the ice) of the group on the east coast was passed in longitude 27° west. The greatest altitude of the ice dome was met in longitude 42° west or on the western side of the medial line of the continent whereas all crossings hithertofore have shown the highest point of the ice dome to be to the eastward of the medial line. The land of the west coast was first sighted on July 2, but the surface streams and morasses of thaw-water offered such difficulties that two weeks longer were required to make the coast, the last horse and the last dog being killed for food. The junior leader of the expedition, Dr. Wegener, is a meteorologist of reputation and has published many monographs and a general text upon the free atmosphere. According to the *Geographical Journal,* from which many of these data are gleaned, the highest point along the route of the expedition was about 9,000 feet above sea level.

UNIVERSITY AND EDUCATIONAL NEWS

THE Massachusetts Institute of Technology will receive about $100,000 as the residuary legatee of the late Frederick W. Emory, of Boston.

A BEQUEST of approximately £250,000, is made in the will of the late Mr. W. Gibson, of London and Belfast, to institute a scheme for providing sons of farmers of counties Down and Antrim with educational advantages.

PROFESSOR JOHN PERRY, of the Royal College of Science, South Kensington, has been appointed a member of the South African University Commission which is to investigate matters connected with higher education and to consider the conditions under which the Wernher and Beit donations and bequests for the purposes of the proposed University of South Africa may best be utilized. The other members of the Commission are Sir Percival Maitland Laurence, formerly judge president of the Supreme Court of South Africa, who is the chairman, ex-Justice Melius de Villiers and the Rev. Mr. Bosman.

MR. ALAN G. HARPER, of Magdalen College, Oxford, demonstrator to the Sibthorpian professor of rural economy, has been appointed to the Indian Education Service as professor of botany at the Presidency College, Madras, during the absence on leave of Professor Fyson.

MR. ALEXANDER MCKENZIE, head of the chemistry department of Birkbeck College, London, has been appointed professor of chemistry in University College, Dundee, in succession to the late Professor Hugh Marshall.

DISCUSSION AND CORRESPONDENCE

A PROPOSED RE-ARRANGEMENT OF SECTIONS FOR THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

ONE feature of the American Association for the Advancement of Science meetings which causes some inconvenience, to say the least, especially in recent years since the average attendance has passed the thousand mark, is the congested and heterogeneous character of the sectional programs. In some of the sections, as at present constituted, the large number of papers offered makes it necessary to restrict or eliminate discussions, thus defeating the main object of reading a scientific paper

to a critical audience before publishing it. Worse still, science is now so diversified and specialized that with only a dozen sections to cover the whole field no one person can appreciate all the papers read in any of the more populous sections, so that one who wants to be sure to hear a certain paper must often sit through several others which mean nothing to him.

For this state of affairs there are several possible remedies, each of which, of course, has some disadvantages. The one which seems most promising is to increase the number of sections. The organization of the Association to-day is not very different from what it was thirty years ago, although since that time several essentially new sciences have claimed recognition and some of the older ones have developed wonderfully. Incidentally the present sectional classification does not discriminate clearly enough between the true or pure sciences and the applied sciences or arts.

Some of the sections already divide into two or more groups with simultaneous programs at the annual meetings, and it is but a step farther to make the separation final, as was done, for example, when the biological section was divided into zoology and botany about twenty years ago. The council of the association at the Cleveland meeting last winter took steps in the right direction by establishing one new section, and proposing an amendment which when adopted will give them the power to create additional sections when desired.

The sections as they will be at the Atlanta meeting are as follows:

A. Mathematics and Astronomy,
B. Physics,
C. Chemistry,
D. Engineering,
E. Geology and Geography,
F. Zoology,
G. Botany,
H. Anthropology and Psychology,
I. Social and Economic Science,
K. Physiology and Experimental Medicine,
L. Education,
M. Agriculture.

Some of the apparent defects of this arrangement may be pointed out before a new one is proposed.

Comparatively few purely mathematical papers have been presented at recent meetings; but mathematics, if included in the American Association for the Advancement of Science at all, should theoretically have a separate section, for it is the foundation of all the exact sciences, and apparently no more closely connected with astronomy than with physics, engineering or logic. Astronomy too should be independent, unless its followers are too few to constitute a separate section. (Possibly some papers on optics and spectrum analysis could be diverted to it from Sections B and C to make up the deficiency, if necessary.) In the smaller colleges it is usually combined with physics rather than with mathematics.

Engineering is not a science in the same sense that physics, geology, etc., are, but rather a group of arts, based mainly on mathematics and physics. Such engineering papers as do not embody distinct contributions to the laws of physics or some other science might well be diverted to the programs of the various engineering societies. An engineer's specialty, like that of any other artisan, is knowing *how*, rather than *why;* and probably most engineers do not regard themselves as scientists at all.

Combining geology and geography in one section is convenient for those geologists who are interested in some phase of geography, and for those geographers whose chief interest is that phase of ecology which deals with the influence of land forms on human activities, but is hardly fair to the explorers, teachers of elementary geography, phytogeographers, zoogeographers and anthropogeographers, who are becoming more numerous every year, and some of whom are doing excellent work without making much, if any, use of geology. Geography certainly now deserves a separate section, as it has had in the British Association for over forty years. Some may still contend that it is not an independent science; but the same could be charged to chemistry, which is analogous to geography in some respects. For chemistry considers the chemical

composition of everything, and the properties of the elements and compounds, while geography in the strictest sense considers the areal *distribution* of everything on the earth's surface, and the properties—so to speak—of all the natural divisions of the earth.

Although it has been but a score of years since the zoological and botanical sections were separated, present conditions seem to call for further subdivision of each. Botany, for example—and a similar statement could be made with respect to zoology—is not a single science, but a group of sciences (plant taxonomy, physiology, geography, etc.), differing widely in point of view, method of treatment and personnel of followers, and having in common only the fact that they all deal with the vegetable kingdom, just as the distinct sciences psychology, anthropology, ethnology, sociology and economics all pertain to the human race.

At the same time an additional section ought to be provided for a class of investigations which has come into prominence since the beginning of the present century, namely, those dealing with mutation, Mendelism and other evolutionary problems. Some papers in this category have been presented to Section F, some to Section G, and some to joint meetings of the two. To a new section for this group might be assigned the much-abused term "biology." Biology was for a long time, and is still in some quarters, regarded as merely the sum of zoology and botany or, worse still, a mixture of a large amount of zoology with a small amount of botany.[1] Some also have treated it as practically synonymous with ecology, particularly animal ecology. But every science is known by its laws, and if biology is defined as the science of life its laws are those which apply to all forms of life and not to inanimate matter, namely, the laws of evolution and heredity.

Many if not most scientists are teachers, and consequently it is natural that when they assemble in large numbers some of them should wish to have formal discussions of educational problems, professors' salaries, university government, etc. But teaching is not a science, but an art, more closely connected with psychology than with any other science; and there are already quite a number of associations organized for the purpose of considering educational questions that lie outside the field of science.

Agriculture is another art, or group of arts, based mainly on plant physiology and ecology. However, the newly created section for agricultural science will be a convenient place for papers on fertilizers, soil toxins, etc., which in recent years have been offered in considerable numbers to Section C, the most crowded of all—or even to Section G—on soil formation and classification, a branch of geology in which very few geologists are interested, and on the physiology and ecology of cultivated crops, a somewhat neglected branch of botany.

The following table is now submitted as an illustration of how the number of sections might be advantageously increased. No doubt it has many shortcomings, which will be immediately apparent to others, and criticism of it will be welcomed. It is divided into two columns, the first containing the names of the sciences and the second a few arts correlated with them, the latter being mentioned mainly to illustrate the contrast between science and art, and the kinds of papers that might be admitted to the sectional programs whenever there happened to be a dearth of genuine scientific material. It is scarcely necessary to remark that the list of arts is much less complete than that of sciences.

SCIENCES	ARTS
Astronomy.	Chronometry. Navigation.
Physics and mechanics.	Hydraulics. Aeronautics. Optics. Mechanical and electrical engineering.

[1] At this point some readers might be interested to turn back twenty years and read the discussion on "the emergence of a sham biology in America," begun by Professor MacMillan in SCIENCE for April 7, 1893, and continued by others in later numbers of the same volume. Dr. Ramaley's note on "What is Biology?" in SCIENCE for January 12, 1912, is also of interest in this connection.

Inorganic chemistry.	Metallurgy. Assaying. Water analysis. Chemical engineering.
Organic chemistry.	Pharmacology. Food analysis.
Petrography, mineralogy, crystallography.	Economic geology. Mining engineering.
Dynamic geology, physiography.	River and harbor improvement.
Historical geology, stratigraphy, paleontology.	Geological mapping and correlation.
Agrogeology (soil science).	Agriculture (in part). Soil mapping and classification.
Biology, or genetics.	Plant and animal breeding. Eugenics.
Systematic botany. Paleobotany.	Economic botany.
Plant morphology and physiology.	Plant pathology, etc.
Plant ecology, sociology and geography.	Agriculture (in part). Forestry.
Systematic zoology. Animal morphology. Paleozoology.	Classification. Taxidermy. Restoration of extinct species.
Animal physiology, ecology and behavior.	Veterinary medicine. Economic entomology and ornithology.
Human anatomy and physiology.	Medicine and surgery. Hygiene.
Psychology.	Psychiatry. Pedagogy. Advertising.
Anthropology, ethnology, archeology.	
Sociology, demography, economics.	Finance. Civics. Legislation.
Geography.	Cartography. Exploration. Regional description.

Very likely it would be better to subdivide the physical, chemical and zoological sections more minutely, or at least differently. For example, it might be well to separate the electricians from other physicists, and the vertebrate from the invertebrate zoologists. In botany, too, the mycologists and bacteriologists have little in common with the students of flowering plants, and might reasonably demand separate sections, unless they are sufficiently accommodated by affiliated societies. Meteorology and climatology, with the related art of weather forecasting, have not been mentioned above, but they should have a separate section, unless their followers are too few, in which case it might be best to unite meteorology with dynamic geology, and climatology with geography.

Of course the more numerous the sections the more papers there will be which would be equally appropriate for two different sections; but this difficulty, which is inherent in all classifications, will be more than offset by the advantages of having the sections more homogeneous, and besides it can be partly overcome by joint meetings, as heretofore.

Incidentally some such classification as the above should serve not only for the purposes of the American Association for the Advancement of Science, but also for the scientific departments of a large university. About the middle of the last century, when the Association had only two sections, in some of our largest institutions of learning all or nearly all the sciences were taught by one or two men, as is done in some small schools to-day. Much more recently botany and zoology were usually included in the same department, and even yet few universities have more than one botanical or zoological department, or a separate chair of geography; the last-named, where taught at all to mature students, being usually combined with geology or even with pedagogy.

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SCIENTIFIC BOOKS

National Antarctic Expedition, 1901–1904. Meteorology Part II., comprising Daily Synchronous Charts, 1 October, 1901, to 31 March, 1904. Prepared in the Meteorological Office under the superintendence of M. W. Campbell Hepworth, C.B., R.D., Commander R.N.R. London, published by the Royal Society. 1913. 4to. 26 p., 1003 charts.

This volume completes such physical results of the British National Antarctic Expedition as were specifically taken under the supervision of the Royal Society. It is a monumental work of unusual polar value, and as such