

of our tabulation uncritically. For instance, the *Proceedings* of the London Mathematical Society and *Fundamenta Mathematicae* have nearly the same rank, whatever criterion is employed. Yet a knowledge of the two journals will tell that the one is more important for a general mathematical library, the other in a department which specializes in questions of the bases of mathematics or in the theory of aggregates. Again, the mere listing of the number of references takes no account of the amount of material covered by one citation. One article in *Acta Mathematica* has many times the length, and in general many times the importance, of one in *Comptes Rendus*. An indication that these statistics may be misleading in the lower ranges is the fact that the *Sitzungsberichte* of Berlin were cited only half as many times as those of Vienna, and were therefore not included in any of our tables. It is probably fair to assume that this difference is due to the accident of the interests of mathematicians publishing in 1928.

In spite of these limitations, libraries may well be definitely helped by this investigation. Of the first thirteen serials of Table II, all except two are strictly mathematical journals, and should, in view of their importance, be on the subscription list of all mathematical libraries. To these the most important additions, in my opinion, are Liouville's *Journal*, *Annali di Matematica* and *Annales de l'école normale*, all of which publish memoirs of fundamental importance. American libraries will of course have the *American Mathematical Monthly*, while *Biometrika* is needed by workers in biological statistics.

Libraries should, as far as possible, have files of the American research journals and, among the longer established European periodicals, should do their best to obtain the *Annalen*, the London *Proceedings* (at

least the volumes since 1890), *Acta*, Crelle's and Liouville's *Journals*.

Since the demand for non-specialized scientific serials is distributed among many departments every college library which wishes to further scientific progress should attempt to have all such periodicals listed in Table II. As has been suggested before, the Berlin *Sitzungsberichte* should certainly be added to the list. After the publications of the Paris and London academies, those from Berlin are the ones whose files are most desirable. The prominence already attained by the *Proceedings* of the National Academy deserves especial mention.

As to the languages which the mathematical worker should have at his command, the usual four are, of course, well in the lead.

TABLE IV
LANGUAGES USED IN ARTICLES CITED

	References in	
	All journals	American journals
English	779	428
German	639	151
French	568	127
Italian	161	50

The high rank of English is obviously due in part to the fact that that language is almost exclusively used in four of the nine journals from which data were taken. It should be pointed out that a large number of the French citations refer to *Comptes Rendus* and *Fundamenta*, where the average number of pages in an article is small. The figures of our table, therefore, give too low an estimate of the relative importance of German and Italian.

THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

GENERAL LECTURES FOR THE DES MOINES MEETING

THE annual meetings of the American Association and associated organizations are now generally attended by several thousand science workers representing a large number of different fields of science, and the cities in which these meetings are held are so selected as to carry the advantages and the influence of the meetings successively into different regions of the eastern United States and Canada. Most of the thousand or more papers and addresses presented are technical in character, given by men and women of science for other workers in their respective fields, but the association aims to have on the program for each

meeting a number of non-technical, semipopular or popular lectures on a variety of scientific subjects. These are given by eminent authorities in their own fields, but they are presented in such style as to be interesting to science workers in other fields and to the intelligent public generally. In some instances illustrated lectures are specially arranged for students in the schools of the city in which the meeting is held. All these general lectures are freely open to everybody and they are widely reported in the daily press throughout the United States and Canada and beyond. Recent results of research and recent trends of thought in the special sciences are thus made available to workers in all branches, and science as a whole

is measurably advanced. Scientific knowledge and increased appreciation of what science is doing are brought to the public. The interest of the youth of the community in well-grounded scientific knowledge and in the scientific method of thought is appreciably enhanced.

The general lectures that are to be given at the approaching Des Moines meeting of the association are more numerous than for any earlier meeting, with a very wide range of topics and many degrees of non-technicality. They are grouped in two series, those to be given at general sessions of the association and those to be presented as complimentary to the public of Des Moines and vicinity. Some of the general-session lectures will be relatively somewhat less popular, while some of the non-technical lectures have been planned specially for the pupils of the Des Moines schools. Nearly all are to be illustrated by means of lantern slides or motion pictures or both. A list of these general lectures is given below; those designated by asterisks are for general sessions, while those marked with crosses are planned specially for school students. The meeting is to open officially Friday evening, December 27, and it will continue through Thursday, January 2.

*"The Discovery of Tertiary Man," by Henry Fairfield Osborn, of the American Museum of Natural History, retiring president of the American Association. *Friday evening.*

"Where Iowa Gets Her Weather," by Charles F. Brooks, of Clark University. *Saturday at 2:30.*

*"An Anthropologist's View of Race," by Fay-Cooper Cole, of the University of Chicago. *Saturday at 4:30.*

*"Some Aspects of Human Biology," the eighth annual Sigma Xi lecture (arranged by the Society of the Sigma Xi), by George H. Parker, of Harvard University. *Saturday evening.*

"Exploration for Human Origins and Migration in the Far Northwest," by Aleš Hrdlička, of the U. S. National Museum. *Saturday evening.*

"The Alleged Sins of Science," by Robert A. Millikan, of the California Institute of Technology, president of the American Association. *Saturday afternoon.*

†"Collecting Live Animals in Africa," by William M. Mann, of the U. S. National Zoological Park. *Monday at 2:30; repeated Tuesday at 2:30.*

"Our Ocean of Air: What It Is and Where It Comes from," by W. J. Humphreys, of the U. S. Weather Bureau. *Monday at 2:30.*

*"Earthquakes and What They Tell Us," by James B. Macelwane, S. J., of St. Louis University. *Monday at 4:30.*

*"The Relation between the Size of the Energy Atom and its Physiological Effect," by W. T. Bovie, of Northwestern University Medical School. *Monday evening.*

"The Adler Planetarium and Astronomical Museum of Chicago," by Philip Fox, of the Adler Planetarium and Astronomical Museum. *Monday evening.*

*A Symposium on the Salary Question, arranged by the Committee on the Economic Status of Research Workers, of the Committee of One Hundred on Scientific Research (Robert A. Millikan, president of the American Association, *chairman*; Rodney H. True, of the University of Pennsylvania, *secretary*). *Tuesday afternoon.*

†"By Airplane to Pigmy Land (Dutch New Guinea)," by M. W. Stirling, of the Bureau of American Ethnology. *Tuesday at 2:30.*

*"The Application of Mathematics in the Social Sciences," the seventh annual Josiah Willard Gibbs lecture (arranged by the American Mathematical Society), by Irving Fisher, of Yale University. *Tuesday at 4:30.*

"The Living Wealth of Alaskan Waters," by Louis Radcliffe, deputy commissioner of fisheries, U. S. Department of Commerce. *Tuesday at 4:30.*

*"Glaciation: the Background of the Development of the Mississippi Valley," by George F. Kay, of the University of Iowa. *Tuesday evening.*

†"Turning the Clock Back Ten Million Years," by Arthur S. Coggeshall, of St. Paul Institute, St. Paul, Minnesota. *Wednesday at 2:30.*

*"Some Aspects of Celestial Evolution," by Edwin B. Frost, of the Yerkes Observatory. *Wednesday at 4:30.*

*"The Laws of Racing Fatigue—Men and Horses," by A. E. Kennelly, of Harvard University. *Wednesday evening.*

†"Clouds of Everywhere and their Splendors," by W. J. Humphreys, of the U. S. Weather Bureau. *Thursday at 2:30.*

This lecture series has been worked out from suggestions made by the executive committee of the association and by the special committee on general lectures (D. W. Morehouse, Austin H. Clark and Henry B. Ward).

BURTON E. LIVINGSTON,
Permanent Secretary

NOTICES AND REPORTS FOR 1929, INCLUDING PREPARATIONS FOR THE DES MOINES MEETING

MANY readers of SCIENCE who are planning to attend the approaching Des Moines meeting, from Friday, December 27, 1929, to Thursday, January 2, 1930, and many who are not going to the meeting may find it useful to have brought together here the following references to articles and notices concerning the meeting and the association which have been published in this journal from time to time in the year just closing. Dates of issues and page references are given.