pected to follow. Eventually it is hoped that sufficient financial aid will be available so that every capable student who is unable to cover his own expenses will be met half-way with a scholarship of the type described.

The terms of the scholarship are as follows:

1. This scholarship is established to promote a keener appreciation of the importance of intelligent travel in geographical study.
2. It is open to all students, both men and women, undergraduate and graduate, who are majoring in geography.
3. The selection of the scholar will be made at the end of the first semester and will depend upon the quality of work performed during the first semester in all courses, as well as upon his general attitude and personal initiative along geographical lines.
4. The candidates will submit all of their notes, lecture notes, laboratory note books, examination and quiz books, term papers as well as those of lesser importance, and also any other material prepared by them in the prosecution of their studies.
5. The scholarship is for one half the expenses of the trip outlined below, up to $100, and the scholar agrees to provide a like sum.
6. The winner of the scholarship will register for course Geography 122 for two credits at the beginning of the second semester. The requirements for this course will be met by this trip about to be described, and the subsequent report.
7. The trip.
   a. The scholar agrees to travel for at least 10, but preferably for 14 days during the Easter holidays to some point at least 500 miles from Madison, as for example to Buffalo, Pittsburgh, New York, Boston, Washington, Savannah, Tampa, Atlanta, New Orleans, Houston, Denver, etc.
   b. The scholar will endeavor to make an intelligent visit to, rather than a research investigation of, the place visited.
   c. He will visit and study as far as practicable at least one feature or point of physiographic or geologic interest, and in addition acquaint himself with the regional physiography of the area traversed.
   d. He will visit at least one extractive industry peculiar to the locality, such as lumbering operations, turpentine production, salt production, some form of agriculture or mining, or quarrying. This will probably demand two or three days in the field.
   e. He will visit, with some attention to details, at least one manufacturing industry peculiar to the locality, such as smelting, printing, spinning, glass making, locomotive or ship building, or the fabrication of some article of commerce.
   f. He will visit at least one institution of a public character such as a museum or institution of learning.
   g. He will familiarize himself with the general plan of one large city, its physiographic setting, the street system, and the arrangement of its different sections, residential, manufacturing, business, transportational and recreational.
8. Upon his return the scholar will prepare a finished report along approved geographical lines, illustrated if possible to fulfill the requirements of Geography 122.

A. K. LOBECK

UNIVERSITY OF WISCONSIN

BREVITY AT BOTANICAL BANQUETS

THIS summer's meeting at Ithaca almost doubled for the year 1926 the opportunities for botanical speech-making in the United States. It may then be not inappropriate or impertinent to discuss the length desirable in such addresses.

Reference is, of course, not here made to papers of a highly specialized character before the various sections of the different societies. These sections are so numerous and so small that no one feels any obligation to attend and each feels perfectly free to leave whenever he chooses. The speaker is then under no obligation to conserve the time of his audience, if any. His position is somewhat like that of an author of a book, who may suit himself or his publisher as to its length, since the weary reader may easily lay the book aside or throw it into the fire.

The obligation for brevity in personal conversation is slight also, for the bored listener can usually escape, either by tact or violence. Whoever addresses an assembly, however, especially one to which people come partly for social reasons and where the auditors feel under compulsion to hear the speaker through, is under a definite obligation to be brief. Not every speaker, of course, can attain the brevity or awaken the enthusiasm aroused by Dr. Britton vicariously in his presidential address at Toronto, but a short speech may be, indeed often is, a good speech.

Brevity in speech, even serious speech, is possible. Lincoln's Gettysburg address contains but 266 words. Paul's speech on Mars Hill contains, in the English translation, exactly the same number. Gamaliel saved the apostles in a speech of 139 words. Franklin, returning to this country in 1783 after his long and distinguished service in Europe, received expressions of congratulation and gratitude from various organizations. His replies to these addresses rarely exceeded 150 words, and one of the most frequently quoted is scarcely one hundred.

Shakespeare appears to have had a very definite conception of what an audience will stand and enjoy.

Examination of his best known plays shows strict regard for brevity in all scenes in which an audience of even a few people is present. In the court scene in the "Merchant of Venice," the Duke's longest speech is 135 words, Antonio's 149, Shylock's longest 229, Portia's 173. In situations which call for longer speeches, Shakespeare is careful to see that they are broken into short units. In "Hamlet," the recitation given in part by Hamlet and in part by the First Player, only 435 words in all, is twice interrupted by Polonius, once with the remark, "This is too long." Brutus' speech, after the assassination, in "Julius Caesar," is but 348 words in length, and is twice interrupted, the longest unit being 235 words. Mark Anthony follows with a speech of less than eleven hundred words, which occupies, as delivered by Mr. John Alexander, just eleven minutes. Yet it is interrupted a dozen times and the longest fragments are but little over 250 words in length. Nowhere, in these three plays at least, does Shakespeare permit a character to address an audience, without interruption, for more than three hundred words.

Since politely suggested "time limits" have not always controlled our after-dinner speakers, is not the advisability of an absolute rule forbidding talks of more than three hundred words indicated? Our speakers could not urge that their messages are too important for such brevity. Who among them chooses a theme more lofty than Paul's, is weighed with responsibilities graver than Lincoln's or brings to us a wealth of experience greater than Franklin's? Nor could they maintain in extenuation of their prolixity that these great men had many opportunities for speech-making. Gamaliel's immortality was gained by one speech, which bears the final stamp of approval, "And they agreed unto him."

Possibly, however, so exact a rule might be construed as a tyrannical limitation of Anglo-Saxon freedom of speech; in which case it might be possible to print on menu cards at all dinners for which formal talks are planned the following instructions for toastmasters and after-dinner speakers of all ages taken from the book of Ecclesiasticus. These directions occupy, it will be noted, in the English translation just 112 words.

> Have they made thee ruler of a feast? be not lifted up, be thou among them as one of them; take thought for them, and so sit down. And when thou hast done all thy office, take thy place, that thou mayest be gladdened on their account, and receive a crown for thy well ordering. Speak, thou that art the elder, for it becometh thee, but with sound knowledge: . . . and display not thy wisdom out of season.
>
> Speak, young man, if there be need of thee; yet scarcely if thou be twice asked: sum up thy speech, many things in few words; be as one that knoweth and yet holdeth his tongue.

NEIL E. STEVENS
BUREAU OF PLANT INDUSTRY,
WASHINGTON, D. C.

SCIENTIFIC BOOKS

An Introduction to Mathematical Probability. By JULIAN L. COOLIDGE. Oxford, Clarendon Press, 1925. xi + 215 pp.

IT is rare that one finds mathematics presented at once attractively and with the mathematical spirit closely guarded, but here is a book exposing many difficult parts of the theory of probability which is also in some sense literature. Its charm seems to be due specially to the fact that it has individuality. There is humor, too, and of an alluring quality, but it is not chiefly the author's sense of humor which holds the attention. Almost every paragraph and every demonstration bears the imprint of his own method of thinking. As a rule the theorems and the demonstrations are not essentially new, and only a few of them are selected from the author's earlier publications, but none the less they possess all the inspirational quality that usually springs only from true originality. The manner in which the story is told is all his own.

The thoroughness with which he has absorbed the ideas underlying his theory before expounding it has some disadvantages, to be sure. It makes the book less good for reference. More nearly standard notation and language would make much of it clearer to him who would read only a chapter here and there, but this is perhaps impossible and certainly quite unnatural if one starts out to put the whole theory in his own words and symbols. More numerical illustrations would be of service, however. To one who reads the whole the notation and language become so familiar that a newly stated theorem immediately has a meaning, but many readers do not approach a new theorem in that orderly fashion. They would like first to jump it, land on an illustration which would contain the essential idea, and then go back and look carefully at the theorem if it should seem interesting. In short, this book is, as it purports to be, chiefly a text for the student who will study it all. It gives the mathematical basis of the theory of probability and of its applications to various fields. In no one of these applications is there sufficient material to satisfy the specialist, only enough to give the mathematical reader an insight into its fundamental concepts. The specialist ought to study it because he ought to know the foundations on which his science rests, in so far as it may be said to rest on any, but