this control was distinctly different from the zonal climatic arrangement of to-day, as manifested by the climatic phenomena recorded in Permo-Carboniferous and in Pleistocene times. The greater part of the "plexus of problems of unparallel difficulty" presented in the Permian is involved in the attempts to fit Permo-Carboniferous glaciations and the concurrent climatic phenomena to the unproved assumption of solar control. This is true of all glaciations, and of the reglaciations following interglacial warmth which so distinctly contradict solar control that it is difficult to understand why the assumption of solar control has been held with such rigid orthodoxy. Neither critic meets the prime question of a dual versus a solar control of geologic climates.

MARSDEN MANSON

BERKELEY, CALIFORNIA,
    OCTOBER 9, 1922

THE EFFECTS OF CAPTIVITY ON A SEX CHARACTER

LATE last winter I noticed a gravid female in a tank containing European brown trout at the New York Aquarium, and suggested that she be removed and stripped.

As is well known, the males of many salmonidæ, including salmon and most trout, develop a hook on the lower jaw in the breeding season, which is serviceable in their fights at the spawning grounds. Specimens with hooked jaws were therefore selected from the brown trout tank for milt to fertilize the eggs.

Then it was discovered that a hook-jawed individual might be a female. This phenomenon was unknown to us, and as far as we know has never been recorded. But we soon found that we had made no unique discovery, for about the time the brown trout eggs were changing into fry in the hatching troughs, the Aquarium received a visit from Dr. Francis G. Macnaughton of Dunshire, St. Andrews, Scotland, who has experimented largely with European trout. When the writer told him of the females with hooked jaws, he said that in Europe this phenomenon has not infrequently occurred as a result of captivity.

Precisely what effect captivity may have upon the somaplasm to bring about this curious

condition, we leave to conjecture; but what a startling biological event it would be if a lioness were to grow a mane and other female animals in captivity developed the secondary sexual characters of the male!

IDA M. MELLEN
THE NEW YORK AQUARIUM

MISUSE OF THE QUESTIONNAIRE

TO THE EDITOR OF SCIENCE: A questionnaire is being mailed to "persons whose addresses are given in the book 'American Men of Science'" to ascertain "what proportion of American men of science are believers in the current religion, what proportion are not," etc. As the questions are in many cases like the famous "Will you leave off beating your mother?" probably the majority of us will ignore them. The bias of the questionnaire is so obvious, it might well be ignored were it not that we shall probably hear before many months that 97 per cent. of American men of science are utterly without religious beliefs, "as shown by a recent careful investigation." Hence I wish to make this early protest against this particular questionnaire and the possibility of drawing any reliable conclusions from the replies received.

HUBERT LYMAN CLARK
OCTOBER 25, 1922

QUOTATIONS
MOTORLESS FLIGHT IN ENGLAND

THE French airman, M. Maneyrolle, won the prize of £1,000 offered by the *Daily Mail*, by a wind flight on October 21 lasting three hours and twenty-two minutes. The notable successes registered during the recent French contests, and especially during the German contests, raised the question whether British fliers could rival the feats of their foreign colleagues, and the offer of a prize of £1,000 by the *Daily Mail* led to the organization, at Itford Hill and Firle Beacon on the South Downs, of the first British gliding contests since the war, which commenced on October 16 and continued through the week. Additional prizes were offered by the Royal Aero Club and others. The entry of British machines and pilots was

very encouraging, there being some two score British fliers, besides foreign aviators, notably the Dutch airman, M. Fokker. A large number of short flights and some quite long flights were made; yet on the whole the results of the meeting were not of a sensational nature until the last day of the meeting. The general conclusion is that British aviators do not fall behind those of Germany, and that it is possible to find suitable arenas in this country for the practice and display of motorless flight. The most notable achievement of the first day of the contest was a thirty-seven-minute glide by M. Fokker, but this was surpassed by a fine flight executed by Mr. F. P. Raynham. This aviator had already taken a place in the front rank of British pilots in the recent air-race round England: he added to his laurels by remaining in the air in a motorless machine for one hour and fifty-three minutes, thus putting himself in the same category as the German record-makers, Martens and Hentzen. But on the last day, Saturday, two world-records were nevertheless established. J. R. Olley went up in a Fokker biplane, and remained in the air with a passenger for forty-nine minutes, while M. Maneyrolle, in a tandem monoplane glider, succeeded in remaining in the air for three hours twenty-two minutes, thus winning the *Daily Mail* prize and beating the previous record, that of Hentzen, by twelve minutes. During the last ninety minutes of his flight, M. Maneyrolle was accompanied by a monoplane glider flown by Squadron-Leader A. Gray, and it was night when the two machines landed within 100 yards of the point from which they started. These competitions on the South Downs will serve as an encouragement to motorless flight in this country, and will help in the accumulation of knowledge and experience on one of the most interesting developments in modern aeronautics.—*Nature.*

SCIENTIFIC BOOKS

The Theory of Functions of a Real Variable. By E. W. Hobson, Sc.D., LL.D., F.R.S., Sadleirian Professor of Pure Mathematics and Fellow of Christ's College, in the University of Cambridge. Second edition, Vol.

1. Cambridge at the University Press, 1921. Pp. xvi + 671.

Because of the war and relativity, we are at present in a period of increasing scepticism towards so-called established principles and facts. Many still believe, however, that mathematical knowledge, at any rate, is beyond dispute. For these there will be great disappointment in the pages of Hobson. The book reads in places like unconvincing philosophy; and instead of statements made with full personal conviction, we find, at times, conflicting opinions of "authorities"—beings supposed, by some, to be unknown to mathematicians—and inconclusive attempts at mediation. And yet it is on the Theory of Functions of a Real Variable that rigor in Mathematical Analysis depends. The first edition appeared in the course of Zermelo's work on *Wohlordnung,* when mathematicians were just beginning to get their bearings on certain controversial matters; after a lapse of fourteen years, there is the same indecision. Other writers on Real Variables and Point Sets—for example, Hausdorff, Carathéodory and Hahn—adopt a single point of view and proceed joyfully without misgiving. Professor Hobson wants to give a comprehensive report—his book is the most voluminous treatment of the subject—to include historical matter, and to be as fair as possible, "no attempt has been made to give dogmatic decisions between opposed opinions." This wish to be fair makes Professor Hobson exchange, at times, the rôle of mathematician for that of reporter; it has the advantage, however, of making the reader independent of the author—a significant advantage when we observe that even among mathematicians instances are observable of opinions held not on their merits but on the ground of personal and nationalistic associations.

The rôle of the mediator, however, is apt to be a hard one, not only in industrial, but even in mathematical affairs. For fear of being one-sided, he may lose vivacity. Thus we read on page 238 [author's italics], *"In order that a transfinite aggregate . . . may be capable of being ordered, a principle of order must be explicitly or implicitly contained in the*