British Museum. In a private letter he writes me:

"I hope you will not mind my pointing out that the remains figured are those of a very typical species of *Amia*, and that the 'united lower pharyngeals' are the vomers, and the 'pre-maxillae' are maxillae. As far as I know this is the first American record of *Amia* from the Cretaceous and there is only one pre-Tertiary European species, *A. prisca* (R. Kner). See A. S. Woodward, 1901, Cat. Foss. Fishes Brit. Mus., pt. iv, p. 371, bottom."

My description was in *Canadian Field Naturalist*, XLI, October, 1927, pp. 145–7.

DAVID STARR JORDAN

MISUSE OF SCIENTIFIC REFERENCES IN COMMERCIAL ADVERTISING

IN the current candy-cigarette war for the control of actresses' testimonials and the trade of the public, the National Confectioners Association, through its research department, in an advertisement published in the *Saturday Evening Post* of January 19, has hit upon the happy idea of misusing the oft-quoted phrase "fats burn in the flame of carbohydrates." This phrase is ordinarily taken to describe picturesquely a relationship in the intermediary metabolism of these two groups of foodstuffs. By the use of asterisks, one specifically in regard to the above phrase, in an unauthorized reference to my text-book, it is made to appear that scientific workers have given their advice to fat people to eat candy and grow thin.

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IMPORTATION OF CINEMATOGRAPHIC FILMS

AS the result of the difficulty and cost of sending a film to England last summer to be presented before the British Association of Anatomists, the House of Commons, on July 23, 1928, passed a clause exempting scientific films from customs duty in England and Northern Ireland. The new clause reads as follows:

"(1) The customs duties imposed by Subsection 1 of Section III of the Finance Act, 1925, on negative and positive films shall cease to be payable in the case of a film which is certified by the Royal Society of London for promoting natural knowledge to be solely an illustration of scientific investigation for exhibition before members of a recognized scientific body and which is imported only for the purpose of such exhibition free of duty.

"(2) If any person exhibits otherwise than as aforesaid any film which has been exempted from duty under this section he shall on summary conviction be liable in respect of each offense to a fine not exceeding fifty pounds."

In regard to the importation of films into this country, the assistant collector, U. S. Customs Service, Baltimore, Md., informs me "That the Treasury Department has ruled that cinematograph films may be imported free of duty by any society or institution incorporated or established solely for religious, philosophical, educational, scientific or literary purposes, for its own use or for the encouragement of the fine arts and not for sale, otherwise they would be dutiable under Paragraph 1453 of the present Tariff Act."

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REPLY TO PROFESSOR WILLCOX

IN his article in SCIENCE for February 8, 1929, pages 163–165, Professor W. F. Willcox simply repeats erroneous mathematical statements the falsity of which had already been called to his attention. (See SCIENCE, December 14, 1928.)

Professor Willcox contends that the choice between "equal proportions" and "major fractions" is a political and not a mathematical problem. His arguments, however, are mathematical, and involve crass misstatements of the mathematical facts.

For example, the statement on page 164 that a certain series of quotients "would sum up to 435" is false. Again, on page 165 the statement that the "method of minimum range" is the same as the "method of the harmonic mean" is false. Again, his whole description of the method of equal proportions is grotesque.

Is it any wonder that he thinks it "undesirable" to request "a report on the mathematical facts" from a competent body of scholars?

It appears to be only by evasive and misleading arguments like these that the method of major fractions can be defended.

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SPECIAL CORRESPONDENCE

GEOLOGICAL WORK IN TONGA AND FIJI

GEOLOGICAL work in Tonga and Fiji under the auspices of the Bishop Museum and Yale University was begun in 1926 when the writers spent several months in these islands. At this time Hoffmeister devoted his attention to Eua and Tongatabu, the southernmost islands of Tonga, while Ladd carried on similar work in Vitilevu, the largest island of Fiji. In April of last year the investigations were resumed for a period of four months.

During the first month Ladd cooperated with Hoffmeister in Tonga and the work on Eua and Tongatabu was completed. In addition a trip was made to Falcon Island, a recently emerged volcanic cone which lies fifty miles north-northwest of Tongatabu. A landing was made under difficult conditions. The island is two miles in diameter and is composed entirely of pyroclastic materials, chiefly scoria and ash. The crater is located on the southeastern side and is occupied by a boiling lake whose waters rise and fall with the tide. Large quantities of steam and sulphurous gases arise from the crater. The crater walls are highest to leeward where they reach an elevation of 365 feet.

Ladd returned to Fiji to continue his study of Vitilevu, while Hoffmeister spent the next two months in the Vavau group at the northern end of Tonga. During the fourth month Hoffmeister joined Ladd on Vitilevu and the survey of this island was completed.

The island of Vavau is made entirely of limestone. Coral limestone predominates along the whole border of the island with the exception of the southern side. The rocks of the latter side and also of the interior seem to be made mainly of foraminifera. This side is characterized by long, deep arms of the sea which run inland in a general north-south direction and which are separated by narrow strips of land. These deep bays were formed by solution of the soft, porous limestone at the time the island stood considerably higher than it does at present. At this time they took the shape of enormous sink holes. Following this, submergence took place so that all but the highest parts of the island were covered by water. Since then elevation has progressed in stages to form clearly defined terraces. During all this time the sea, aided by the strong trade winds, had been cutting deeply into the limestone on the south and southeastern sides. In some places the southern rims of the sink holes were cut through and the latter were turned into bays. Although no detailed study of the rocks has been made it seems very probable that Vavau is considerably younger than the island of Eua. The latter has been found to contain some Eocene rocks and is beyond much doubt the oldest island of Tonga.

A large part of the 1928 field season was devoted to a study of the structural geology of Vitilevu. It seems clear that faulting has played a very important rôle in the history of the island. It is responsible for numerous topographic features, has determined the main drainage lines and is believed to be the mechanism by which Vitilevu was severed from a much larger land mass that extended to the west. Rarely do the rocks of Vitilevu exhibit folding. High dips are local and usually are definitely related to fault lines.

The more important steps in the geological history of Vitilevu seem to be as follows:

(1) The formation of a series of ancient volcanics and sediments.

(2) Mountain building and the intrusion of plutonics. This event occurred at least as early as Cretaceous time.

(3) Prolonged erosion which removed most of the older rock and exposed the plutonics over wide areas.

(4) Submergence, probably by faulting, at the beginning of the Miocene. It was at this time that Fiji's continental connection was lost. Apparently very little of Vitilevu showed above water.

(5) Extrusive vulcanism—tuffs, marls and flows. Lower Miocene.

(6) Cessation of vulcanism and widespread deposition of foraminiferal limestone to depth of several hundred feet. Lower Miocene.

(7) Uplift by block faulting with the extrusion of volcanic materials along major fault planes. The older volcanics and the limestone were much fractured by this faulting. Some of the fault blocks were elevated three thousand feet. Most of the volcanic material was ejected as agglomerate, which was reworked to form tuffs, marls and conglomerates. Locally small amounts of foraminiferal or coralliferous limestone were formed. Miocene to near Recent.

(8) Development of present topography and modern reef building. Minor faulting.

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SCIENTIFIC BOOKS

Our Federal Lands. By ROBERT STERLING YARD, Executive Secretary, National Parks Association. Illustrated. New York. Charles Scribner's Sons. $5.00.

"WE are admittedly the richest, most powerful nation in the world and we took this power of wealth out of the ground. Now, we must invoice our resources and determine how we should proceed from here. For a nation begins but once," writes Dr. Hubert Work, secretary of the interior, in closing a brief and striking foreword to this remarkable book. Remarkable truly since no one heretofore has ever essayed the task of describing and inventorying the extensive and varied territory which the author has brought together under the new and inclusive term of "Our Federal Lands." No one who scans even superficially the pages of this work can fail to be impressed that in these lands the United States has