

the foregoing case, except that the body of the violin has four or five well-marked free periods instead of only one or two, as in the case of the resonator concerned in the production of the human voice. The special character of the vowel sounds really arises from the last-mentioned circumstance, as a result of which most of the energy is concentrated in a small group of partials. It seems to me that there is no justification for supposing that there are any "inharmonics" present in the voice tones.

C. V. RAMAN.

210 Bowbazar Street, Calcutta, March 29.

IN reply to Prof. Raman's interesting letter, I may say that the response of a strongly damped resonator to a series of sharp impulses may be harmonic or inharmonic to the period of the impulses; the essential fact is that they are independent. If we knew nothing more of the vowels than that the exciting voice tone consists of a series of sharp puffs and that the vocal resonators are strongly damped, we could say nothing of their relations except that they might be anything. The analyses of the vowel curves show, in fact, that the cavity tones may hold any relations to the voice tone, both harmonic and inharmonic.

With the violin the case is different. The string does not produce sharp puffs, but continuous vibrations of alternating phases. During each phase the action on a resonator is constant. The vibration aroused in the resonator has no pause in which to die away. The resonance vibrations are thus forced, and not free, vibrations. They must be harmonic to the fundamental. This is clearly shown in the plot reproduced from Prof. Miller's book in NATURE for March 3 last. The fundamental is strong and the overtones are all harmonic. This is in contrast to Prof. Miller's plot for a vowel. The fundamental is apparently absent; the overtones form a queer group of discordant tones that can represent only an inharmonic in that region.

E. W. SCRIPTURE.

Literature for Jerusalem University.

At the third annual conference of the Inter-University Jewish Federation held at Oriel College, Oxford, on August 3, 1920, it was unanimously resolved, in response to a request of the Zionist Organisation, to render every possible assistance to all efforts on behalf of the Hebrew University at Jerusalem. The most urgent need at the present juncture is an immediate and abundant supply of books for the Jerusalem University library. We can conceive no cause more precious and commendable than the full development and firm consolidation of the intellectual and spiritual resources of the Jewish national home. To this end books are the first requisite. In a scarcity of books the mind of a people is denied free expansion and healthy growth. To Jews, with their love of learning, the lack of books is most distressing. In Palestine, unfortunately, there is a real book famine, and even with help from all over the world it will need a great effort to build up the present University library of about 40,000 volumes into an up-to-date library worthy of the Jewish University.

For various reasons, including the difficulty of obtaining sufficient funds to establish a complete university from the start, it is proposed to institute research departments as the first foundations of the University. These will include institutions for

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chemical, microbiological, and medical research to deal with the resources of Palestine and its special difficulties. Books on physics and mathematics, sets of scientific journals, and pamphlets of permanent value are especially required; good text-books of established repute will also be useful. Readers of NATURE have it in their power to render great assistance in supplying these scientific books and pamphlets.

Considering that this is an important step-towards a spiritual revival of Palestine, and that our credit as an enlightened people is at stake, we appeal to readers of NATURE to send all the books that they can spare as a freewill offering to those who will treasure them in Palestine. A single book will be welcome, but it is hoped that donors will send as many as they can. Gifts of books may be sent either direct to the University Library, Jerusalem, or to Miss N. Mandler, 75 Great Russell Street, W.C.1, who will, if necessary, arrange for the collection of the books. An artistically designed book-plate, the generous work of Mrs. L. Pilichowski, will permanently record the names of the donors.

S. ALEXANDER,
Chairman.

ISRAEL M. SIEFF,
Treasurer.

D. B. STANHILL,
Hon. Secretary.

Jerusalem University Library Committee,
75 Great Russell Street, W.C.1, April 29.

Waste Oil from Ships.

IN the *Landmark* for May Sir Arthur Shipley has a very timely and important article on "The Danger to Fish and Bird Life from Oil-driven Ships." I could add my testimony in support of his argument, but wish now to raise the question whether, as he states, "nothing can prevent the oil getting into the bilge." When I was recently at Funchal, Madeira, I visited H.M.S. *Dunedin*, of the Light Cruiser Squadron, and was shown the oil-burning engines and many other wonderful things. I raised the question of the injury caused by the oil, and was assured that there was no loss of oil in the *Dunedin*, and that leakage, when it occurred, was due to faulty construction. If this is true, the remedy is obvious; it is intolerable that so much damage should result from preventable causes, and the public is entitled to protection. In any event, all those interested in the matter should urge the engineers to attack the problem at once, and show us what to do to abate the nuisance.

T. D. A. COCKERELL.

4 College Road, Isleworth, Middlesex.

Organism in Flint.

Is not the organism photographed under the care of Mr. C. Carus-Wilson (NATURE, May 5, p. 299) far more probably a radiolarian than an insect? The apparent segmentation of the "antennæ" may be due to secondary deposits of silica, and the partition may be caused by the nearness of the plane of section to the inward bulge on the meeting-line of the two chambers of the test. Without an examination of the slide, any suggestion may be rash; but we know little of the Mesozoic types of Cyrtida, and this organism may represent a previously undescribed member of that group. References to descriptions of Cretaceous radiolaria are given by W. Hill and A. J. Jukes-Browne in the *Quarterly Journal of the Geological Society*, vol. li., p. 600, 1895.

GRENVILLE A. J. COLE.