of the wires were made to dip into mercury held in metallic cups connected to the poles of the battery. Thus, though conduction was assured, there was practically no friction in the bearings.

Colladon tested out each piece of apparatus and at last joyfully sought Ampère near midnight, dragged him from his game of chess to the laboratory at the Collège de France, and forced him to witness the entire series of experiments successfully carried out.

Ampère then summoned his audience to a second lecture and in highly successful experiments established his prophecies and demonstrated the laws he had enunciated.

CHARLES A. DOREMUS

BREADFRUIT IN THE MARQUESAS

IN the January 18, 1924, issue of SCIENCE, page 64, Mr. P. J. Wester writes from Manila, urging an expedition to the Marquesas and other South Sea Islands, primarily for the purpose of making secure the continued existence of the breadfruit, secondarily, by a study of the varieties, to add further evidence relative to the migrations of these inhabitants of Polynesia.

He invites correspondence, hence this communication. Mr. Wester refers to statements in the romantic "White Shadows in the South Seas," and to the interesting article by Church in the *Geographic* for October, 1919, and mentions Church's prediction that in ten years from that date "there would not be a full-blooded Marquesan alive." If taken literally, this would mean that the year 1929 or 1930 will witness the extinction of all pure-blooded Marquesans, and consequently, very shortly after, according to Wester, the gradual dying out of all Marquesan breadfruit.

I have just returned from a seven months' trip to the Marquesas, and while the situation, due to the degrading influences of so-called civilization by the whites, is serious enough from a humanitarian standpoint, I can hardly share, to its fullest extent, Mr. Wester's rather doleful outlook, either as regards the complete extinction of the true Marquesan or the extinction of the breadfruit resulting from the disappearance of the full-blooded native.

The present population of all the six inhabited islands of that group of eleven, numbers, according to Mr. Frank Varney, a long-time resident on Hivaoa, about 1,000 or 1,200. Only a small proportion of these are pure bloods, most of that number being natives from the Tuamotus or the Society Islands, and many of them are half-bloods or quarter-bloods, Chinese features being very common. But I met many middle-aged, elderly and old, pure-blooded Marquesans, a fine, self-respecting race, commanding our admiration and pity. I can not believe that all these people, whom I saw in 1922 and 1923, will have vanished in 1930. It will take a longer time than that, perhaps only a few years longer, before the last pure-blooded Marquesan steps off the stage. I am quite sure that Dr. Linton,[1] of the Field Museum, and Dr. Handy, of Bishop Museum, Honolulu, both of whom have made a special study of the Marquesans, will agree with me in this.

But what is more to the point under discussion is that Mr. Wester evidently overlooks the fact that many of these pure bloods are leaving descendants, mixed bloods, to be sure, but just as much interested in the preservation of their ancient food, the breadfruit, as were their ancestors. Will not this fact tend to preserve these trees for a long time to come?

I found the breadfruit abundant on all the islands visited (fortunately, I was not obliged to eat poipoi) somewhat dwarfed when growing in the "jungle" in neglected valleys, but an enormous and noble tree when given space. The "jungle" of the Marquesas, by the way (although the islands are between 8 and 11 degrees south latitude) is by no means a tropical jungle as the latter is usually pictured, but is made up very largely of young and old and dying and dead specimens of the Fau, or Purao tree, a native hibiscus which grows to a large size, and is much used by the natives for building. One does not see, in the Marquesas, the rank, choking growths peculiar to Brazil, Central America and other really tropical countries. The appearance of the valleys in that group is more subtropical than tropical, and hence, while this growth may dwarf the breadfruit to a greater or less extent, it does not seem that it would always be fatal to its existence.

It is perhaps appropriate to describe briefly, in this connection, the agricultural conditions in Typee Vai, the valley on Nukuhiva made famous by Melville's classic "Typee." It will be remembered by those who have read his narrative that he escaped from his ship in Taiohae Bay in 1842 and was held a prisoner for many months by the cannibals of Typee. At that time he figured the inhabitants of the valley as represented by about 2,000 souls, with perhaps 2,000 more in the neighboring valley of Houmi. A period of 80 years has elapsed (not a long time historically) between his sojourn there and my visit in 1922. In November of that year I found 44 people in Typee, and 65 in Houmi, though from Pere Simeon Delmar, the charming and self-sacrificing priest at Taiohae, who is in close touch with all his people, I learned that the death rate in Typee had been normal for sev-

[1] Since writing the above I have received a letter from Dr. Linton in which he says: " . . . I certainly do not think that either the full-blooded Marquesans or the breadfruit are in immediate danger of extinction. The natives of Uapu and Uahuka are slightly on the increase and those of Fatuhiva are holding their own."

eral years and that one or two families there had many children.

I was astonished at the appearance of Typee Valley; for, from reading "White Shadows" and from Church's story, and from Mrs. Handy's article in the *Yale Review* for July, 1922, I expected to see a valley of desolation and ruin, with perhaps a dozen decrepit old people, green from long drinking of kava—worthless wretches in a huddle of huts on the shore. What I did see was an enormous valley, over a mile wide and ten miles long, beautifully green, with Melville's storied waterfall still showing as a silver thread amongst the verdure at the head of the valley. But the most astonishing revelations were the (few to be sure) large and luxuriant plantations of cocoanut palm, bananas and some breadfruit which checkered the lower part. As I stood on the ridge between Happar Valley and Typee and looked down into the latter, I was not only amazed at seeing evidence of comparative prosperity, though in a limited area, where I expected utter desolation, but I was deeply impressed with the agricultural possibilities of this historic region.

Finally, I believe the most significant factor in this matter of the preservation of breadfruit, both in the Marquesas and Society Islands, is the presence in the latter group of enormous and ever-increasing numbers of Chinese or half-Chinese who are as industrious and thrifty as the native is lazy and profligate. It looks as if they will very shortly own the islands in the eastern Pacific commercially. I will venture to say that in ten years Tahiti, picturesque and romantic for so long a time, will have lost its charm because of the presence of hordes of low-caste Chinese and half-bloods. However unattractive this may be from the standpoint of the tourist and sentimentalist, there is no contradicting the fact that they will make these islands a thousand times more productive than would the pure-blooded native, and their skill and habits of application will undoubtedly extend to the preservation of the breadfruit. The Chinese and half-blood Chinese are on all the Marquesan islands which are inhabited, and it will be to their financial interest as well as to the interest of their personal food supply, to preserve the breadfruit there as well as in the Societies.

It is notable that the cocoanut and banana plantations and papaye (papaw) groves in Typee at the time of my visit, were either owned or worked by Chinese or half-bloods (Chinese + Tahitian or Chinese + Marquesan).

Referring to the last paragraph in Mr. Wester's communication—It would appear that if one is dependent, as was the writer, upon trading schooners to get from Tahiti to the Marquesas, then amongst these islands and return to Tahiti, his program for work in these two groups would take more than a year and his estimate of expense might, in consequence, be exceeded. Sometimes one is obliged to wait from one month to three to get the opportunity to move from one island in the Marquesas to another forty or fifty or eighty miles away, so rare and uncertain are the visits of these schooners. Further, in the absence of any regular means of communication, one has to seize any chance opportunity of transportation or run the risk of being marooned for a long period. On the other hand, if a schooner were chartered, which is the best possible way of visiting and working among the South Sea Islands, schooner, captain, crew and provisions would cost about $1,000 per month (this figure was obtained from an authoritative source) and a year on shipboard might not be needed. Under such conditions Mr. Wester's calculation of $8,500 for a year's work in the Marquesas and Societies may not be far out of the way.

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WHAT IS A WEED?

PROFESSOR CAMPBELL'S comments upon this subject (July 20 issue, p. 50) are well put, but he undertakes to define what should be meant by the term rather than what is in common usage. Perhaps this word, like many others (botanist, for example), now does not serve its purpose as well as formerly. In that case it might be better to devise new terms rather than to modify the application of the old one. Such improvements are none too popular with either layman or scientist, but are adopted if well chosen and if such a need is apparent.

There are many plants commonly called "weeds" which do not fall within the proposed definition. Dodders and other parasitic seed plants have occupied such a prominent place in weed literature that it seems questionable whether they could be removed readily or whether placing them with parasitic fungi would be an improvement. Parasitic plants differ somewhat from independent ones in their habits, but is this not a minor difference? They still are in competition for food. We would make no distinction between a thief who steals flour and one who steals bread. Plants of rye in a wheat field, trees or bushes in or beside a field certainly are in active competition with the crop for food materials. If we do not think of fungi as weeds, is it not because of the invisibility of the plant body to the eye rather than their parasitic nature? One character commonly assigned to weeds is that they harbor fungus and insect pests. The writer has pointed out[1] that the common barberry is regarded as a weed, although it has no other attribute of the group.

[1] *Scientific Monthly*, August, 1923.