a natural tendency to twist the tree from the left to the right. In other words, it would appear, if this explanation is correct, that the tree is a recording weather vane.

On return to his office this fall, Dr. Cahn replied to my letter and stated that he had come to about the same conclusion and suggested that this note be put in SCIENCE.

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"RICKETTSIA" AND "SYMBIONTS"

GLASER'S comment on our paper[1] (SCIENCE, September 4, 1931, p. 243) does not help to clarify the problem. We are in entire agreement that "Tinctorial properties *alone* (italics ours) do not constitute valid taxonomic characters." We attempted to point out that there are in the insects studied by us organisms which differ morphologically, tinctorially and culturally from other known bacteria as well as from the so-called "Symbionts." Symbionts in various insects probably consist of a variety of bacteria, while the organisms grown by us were uniform in character and appeared in every way to correspond to the description of classic Rickettsia. Therefore, we urged that for sake of clarity we cease confusing "Rickettsia" with "Symbionts." Even conservative bacteriologists, and we count ourselves in that class, have recognized the wisdom and conservatism of dividing the erstwhile genus *Bacillus* into a number of distinct genera. Differentiation of unrelated groups can hardly be considered "splitting," even by the ultra-conservative.

I. J. KLIGLER
M. ASHNER

JERUSALEM,
OCTOBER 20, 1931.

REPORTS

FORMAL OPENING OF THE NEW BERMUDA BIOLOGICAL STATION FOR RESEARCH

THE formal opening of the Bermuda Biological Station for Research, Inc., and the induction into office of its new director, Dr. J. F. G. Wheeler, took place at the new home of the station, "Shore Hills," St. George's West, Bermuda, on Wednesday afternoon, January 6, in the presence of His Excellency, the Governor of Bermuda, General Sir Thomas Astley-Cubitt, K.C.B., etc., and members of his family, members of the Colonial Government and more than five hundred invited guests. Six trustees of the station went down from New York with five guests, two of the Bermuda trustees were present and took a leading part in all the arrangements.

The band of the Northumberland Fusiliers was present in brilliant uniforms, and their music added materially to the pleasure of those attending the function. Special trains on the newly opened railroad conveyed guests from Hamilton and St. George, and Bermuda papers reported the gathering as "the most distinguished and representative seen on any public occasion for many years."

The governor and his party were met by the trustees at the south entrance and were seated in the open court, while the other guests came in by the north entrance and were seated in the verandas and balconies surrounding the court, where the exercises took place. Mr. F. G. Gosling, trustee of the station and for thirty years active in the development of scientific work in Bermuda, opened the exercises with a brief account of the steps which had led up to the present consummation. Thirty years ago, he said, the Bermuda Natural History Society was formed with the prime object of establishing the Bermuda Biological Station and the Public Aquarium. On every occasion the legislature had granted money when approached by the society and this culminated last year when £5,500 was given to assist in acquiring the present site. The Rockefeller Foundation had most generously supported the scheme and had made possible the present splendid development. The result was that to-day Bermula could take great pride in the part played by the government and people in the establishment of the station, which was a purely scientific institution, without any commercial object or aim. He especially commended the action of the trustees in appointing a British subject as the first director of the reorganized station, which statement was loudly applauded. He then introduced Dr. E. L. Mark, of Harvard University, the former director of the old biological station, saying that Bermuda owed him a deep debt of gratitude for his efforts and insistence in helping to bring the station to its present stage.

Dr. Mark, who was warmly greeted on rising to speak, was obviously overjoyed that his dream of so many years had come true, and we give his summary of the history of the station.

Your Excellency, Ladies and Gentlemen: My first impulse is to call you—as many of you long have been—my dear friends.

It is a great pleasure to meet you collectively and to express my keen appreciation of what you have done, both officially and unofficially, to further the interests of the Bermuda Biological Station for Research.

[1] *J. Bacteriology*, 22: 103–114, 1931.

The establishment of the station in 1903 was made possible by the cooperation of several interests. My own participation is due to suggestions made by Charles Eliot, president of Harvard University (who spent the winter of 1900–01 in Bermuda) and to my meeting by chance the late Professor Charles L. Bristol, of New York University, whose pioneer work in advocating the aquarium and station is well known to all Bermudians.

At the invitation of the Bermuda Natural History Society, Professor Bristol and I visited the islands in April, 1903, with a view to aiding in the selection of a site for the station and a public aquarium, the latter to be owned and controlled by the Colonial Government.

After a careful survey of various regions—having in mind the facilities for research, as well as the all-important matter of income from entrance fees to the aquarium—the Flatts Inlet was selected.

By an agreement between New York and Harvard Universities, it was arranged that the station should be established with the aid of funds raised for the purpose by the representatives of the two universities, *viz.:* by myself as director, and by Dr. Bristol as associate director. The laboratory equipment was purchased with funds solicited from graduates of Harvard University, and the station was opened in June, 1903, at the Hotel Frascati. All properly qualified persons (women as well as men), from whatever institution they came, were admitted without fees on equal terms.

For two more summer seasons (1904 and 1905) the work was carried on at the Frascati, and meantime plans for a more permanent location were perfected. Through the agency of the Natural History Society, it was proposed that the Colony should buy a suitable piece of land from the Allen estate near the bridge and should erect on it a building, the lower story of which should be devoted to the aquarium and the upper story placed at the disposal of the biological station. The land was bought, but, unfortunately for the rest of the plan, the War Department of Great Britain about this time suffered a 50 per cent. reduction, which had the effect of greatly diminishing the income of the Colony, so that it was impossible to complete the whole plan. As a result, no work was carried on during the summer of 1906. However, by a fortunate turn of events, Agar's Island became available for this purpose. The society was able to rent the island from the War Department and proceeded (as you know) to convert its "Magazine" into an aquarium. At the same time—the agreement between New York and Harvard Universities having been dissolved—I was invited to resume, as director, the work begun at the Flatts. Accordingly, the laboratory equipment of the station was transferred from the Flatts to a large building on Agar's Island, and those in attendance on the summer session of 1907 were lodged in the cottages on the property.

From the time of the resumption of work in 1907, it had been the aim to provide for investigators at all seasons of the year, but it was not until 1915 that such a plan was fully realized by the appointment of Dr. William J. Crozier as "resident naturalist."

Until April, 1917 (when the United States entered the "World War"), we had remained in undisturbed possession of the island, but unexpectedly we were then notified that we must at once vacate the place, and the whole equipment was transferred to Denslow's Island, where by the generous terms of the owners we were able to reestablish the laboratory.

Some months after the signing of the armistice, *viz.*, in May, 1919, we were allowed to resume possession of Agar's Island. From that time on (the aquarium having been closed), the money so generously granted by the legislature was turned over to the director of the station, who as the representative of Harvard University rented the island from the War Department, and continued so to do till it was sold to Furness, Withy and Company. Since then, through the liberality of the owners, we were permitted to occupy the island till the middle of last June, when the equipment was turned over to the Bermuda Biological Station for Research, Inc. (in accordance with an understanding with Harvard University) and transferred to Shore Hills.

Such is, in brief, the outline of the history of the unincorporated station. As to the scientific results of activities at the station, I must refer you to the nearly 170 articles published by workers at the station. Reprints of these papers are collected into six completed volumes, and one nearly completed, of the Contributions from the station, a set of which you will find in the library on the second floor of this building.

I greatly regret that the time available does not permit me to enumerate the persons who have been most active in supporting financially, and otherwise, the activities of the station, and also the long list of distinguished biologists whose work is evidence of the value of the opportunities provided for them.

In closing, I can do no better than bespeak for my successor, Dr. Wheeler, and the enlarged oceanographic aims of the station a continuance of that loyal and hearty support you of Bermuda have given in the past.

At the conclusion of Dr. Mark's address, Mr. F. G. Gosling requested His Excellency to declare the station open, which he did in the following words:

I do not have to open a dictionary to find out what "biology" means, but I can see at a glance that Bermuda is fortunate to have such an institution as this, and I can think of no more beautiful and convenient site. I have not had the pleasure of visiting the station before, but in common with many others, it will give me great delight to visit it on many occasions in the future. I am not quite sure whether Dr. Beebe will be transferred to this station or whether he is a different biological specimen, but it is most gratifying to know that Bermuda attracts such eminent scientists as now visit and work in this island. I feel sure, too, that to Mr. F. G. Gosling we owe many thanks for his long and enthusiastic work on behalf of this station.

St. George's is a most appropriate site for the institution, [he continued amid laughter] for it was here that the first biological specimens arrived on the island.

It gives me much pleasure to declare the station open, and I wish it every success.

Dr. E. G. Conklin, of Princeton University, president of the Bermuda Biological Station, then spoke of the organization and aims of the Station as follows:

Your Excellency and Honored Guests:

The question has been raised by several of our guests as to how the new Bermuda Biological Station for Research differs from the old one and from Dr. Beebe's Bermuda Oceanographic Expedition. These differences may be characterized in three paragraphs.

(1) In the first place this new station differs from any and all others in this hemisphere or in the entire world, so far as I know, in being really international in its organization. At the initial meeting of the promoters of this new station it was decided to ask leading scientists and contributors to the cause of science in all countries to join in forming a corporation which would be the ultimate body owning and controlling this station. There are now more than two hundred members of this corporation, representing ten different countries. This large corporation then elected a board of trustees to administer the affairs of the station, and in 1926 this organization was incorporated under the laws of the state of New York. There are now twenty-three trustees in our board, representing Bermuda, Canada, England, Scotland and the United States; our organization is truly international and in this respect differs from all other biological stations in this hemisphere.

(2) In the second place the Bermuda Biological Station, like the Marine Biological Laboratory at Woods Hole, is a cooperative institution in the widest sense. While it is the purpose of the trustees to have, as soon as possible, a resident scientific staff, in addition to our resident director, carrying on a program of research in the physics, chemistry and biology of the ocean in the vicinity of Bermuda, this station will also afford opportunities to competent scientists from all countries to pursue independent researches on these subjects, or to join in the general work of the scientific staff. For many years to come, perhaps indefinitely, the major work of the station will consist of such independent investigations of visiting scientists. Already inquiries or applications for research space have come from leading scientists of Canada, England, Scotland and the United States, and there is abundant evidence that the Bermuda Station may count upon the scientific cooperation of scientists throughout the world.

Cooperation is also manifest in the financial as well as in the scientific support of the station. The Bermuda Government by its grant of £5,500 on condition that £50,000 be secured elsewhere took the initial step in this cooperation. The Rockefeller Foundation by its grant of £50,000 met this condition. In addition the Bermuda Government has for several years given £200 a year toward the support of the station and has granted duty-free importation for all equipment and supplies. The Royal Society of London at the initiation of this new organization made a small grant, to indicate its interest in and cooperation with the Bermuda station. Last July the Empire Marketing Board of Great Britain made a conditional grant to the station of £2,500, but owing to the financial crisis has been compelled to postpone this indefinitely. To meet the requirements of our budget in these times of financial stress the Rockefeller Foundation has recently made an emergency grant of $6,000 a year for a period of two years. In return for the use of the facilities of this station the Woods Hole Oceanographic Institution has contributed $2,000 for the current year, and seven universities and scientific institutions in the United States and Canada have agreed to support research tables or rooms at the station. Undoubtedly this number of cooperating institutions can be greatly increased in the near future. In addition to this governmental and institutional support the station has received aid from many individuals, in the form of money, instruments, books and journals, and last, but not least, generous contributions of labor, time and advice. To all these cooperating organizations and individuals we extend hearty thanks and bespeak the continuance and extension of their interest and support.

In order to correct any misunderstanding that may exist as to the purchase of the Shore Hills property and its remodeling for the uses of the station, I may say that the trustees paid to the former owners $80,000 from the Rockefeller grant and that the entire sum given by the Bermuda Government has been spent here in Bermuda for the necessary alterations and repairs.

(3) A third characteristic of the new Bermuda Biological Station is the breadth of the scientific work which is contemplated. This will make it much more than a biological station, for in addition to the usual work of a marine biological laboratory and the extraordinary opportunities offered here for the study of the physiology and life-histories of deep sea animals, we propose to investigate the physics and chemistry of the waters as well as their biology. There is offered here an almost unrivalled opportunity to make an intensive and long-continued study of the drift, temperatures, salinity, oxygen content, etc., of ocean waters down to a depth of more than 2,000 fathoms, and the relation of all these environmental factors to the kinds and abundance of living forms. We expect to study the causes and rate of reef-formation, erosion and sedimentation, but we do not imagine that we can ever raise the level of these islands some thirty feet and thus increase their area approximately twenty times, to their original dimensions, as was humorously proposed to us by the late governor, General Bols. We do hope to make extensive surveys of the ocean bottom with accurate determinations of the force of gravity, bottom deposits, etc., and thereby add to our knowledge of the causes at work in the formation of oceanic islands, but we do not anticipate that such studies will have any immediately practical value. They may never increase the food supply nor the means of living, but they should furnish much food for thought and should increase and ennoble the aims and joys of living.

One hundred years ago a wise and generous English-

man, James Smithson, bequeathed to the United States of America a fortune of more than half a million dollars "to found at Washington under the name of the Smithsonian Institution an establishment for the increase and diffusion of knowledge among men." Thus was created one of the first and greatest scientific institutions of the New World. We who are concerned with the foundation and development of the Bermuda Station wish to emulate the example of James Smithson and to establish here in this British Colony, this island paradise, an institution "for the increase and diffusion of knowledge among men," and to this end we invite the cooperation of governments, foundations, universities and individuals. What other objective is more worthy of high endeavor and great endowment?

This institution is not finished, but only begun. Its long period of incubation under the supervision of Dr. Mark has finally led to its birth in this beautiful and strategic site. Before it, let us hope, lies immortal youth and growth, and ever widening usefulness in the highest service to mankind!"

President Conklin then inducted the new director into office in the following words:

John Francis George Wheeler, B.Sc. and D.Sc. of the University of Bristol and formerly lecturer in the same, student at the Plymouth Laboratory of the Marine Biological Association of the United Kingdom, investigator for the Ministry of Agriculture and Fisheries, zoologist with the *Discovery II* Expedition to South Georgia and South Africa in 1924–27, and again in 1929–30, for the last year in charge of the *Discovery II* office in London, author and co-author of notable monographs on Southern Blue and Fin Whales—By the authority and in the name of the trustees of the Bermuda Biological Station for Research I induct you into the office of director. I charge you to remember that this is a cooperative and not a one-man institution. I bespeak for you and for Mrs. Wheeler the cordial friendship of the people of Bermuda, and I pledge you the support of the corporation and trustees in the further development of this station.

Dr. Wheeler responded in a brief address, in which he said that he was deeply conscious of the great honor and responsibility that had been conferred upon him. He felt that he and his wife had joined a family community in Bermuda and he realized that he was following in the steps of a long line of scientists who had labored to establish the Bermuda Station. There was, he said, a wonderful opportunity for scientific work here, for the ocean abounded with life and it was the duty of scientists to study that life and to make their studies of service to mankind. He spoke particularly of the many correlations of plants and animals in the sea and illustrated this by his studies on the whales of the Antarctic, and then pointed out the bearing of all these correlations on the whaling industry and the manufacture of soap. He ended by expressing his confidence in the support of the board of trustees and of the government and people of Bermuda.

At the conclusion of this ceremony guests were invited to inspect the various aquaria, laboratories, library and living rooms at the station and to partake of tea and refreshments in the main hall and dining room. Thanks to the spacious quarters and to the interesting exhibits it was possible to entertain the entire company in a satisfactory manner.

The concluding paragraph of the extended account given in the *Royal Gazette and Colonist Daily* may be quoted as an indication of the general impression in Bermuda of the new biological station:

And so concluded an event that marks an era in the history of Bermuda. Everyone present was deeply impressed with the importance of the occasion and there is little doubt that the Bermuda Biological Station is destined for a great future. To all those who have contributed to its foundation Bermuda owes a debt of gratitude difficult to express or repay.

E. G. CONKLIN

PRINCETON UNIVERSITY

SCIENTIFIC APPARATUS AND LABORATORY METHODS

A CONVENIENT PREPARATION FOR THE REMOVAL OF HAIR

THE depilatory, reported in this paper, has been used in my laboratory for some time. At the suggestion of some colleagues, I have decided to describe the method used for preparing it.

This preparation is *very toxic* if injected subcutaneously or intraperitoneally into white rats or guinea-pigs. There, however, are no apparent toxic effects when it is used for removing hair from large areas on laboratory animals.

There are several advantages in using such a hair remover: (1) inexpensiveness, (2) ease of preparation, (3) quick action, (4) a smooth unscarred area which is necessary in certain types of investigation, and (5) the activity does not decrease markedly on standing.

EXPERIMENTAL

The apparatus consists of three one-liter flasks, one one-hole rubber stopper, one two-hole rubber stopper, glass tubing and rubber tubing for connections. The arrangement of the apparatus is shown in Fig. 1.

Hydrogen sulphide is generated by means of ferrous sulphide and hydrochloric acid in flask No. 1. The gas passes through flask No. 2, which is about