

~~Wood's Hall~~ The Organization  
and Ideals\*

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Organized Cooperation becomes more and more important as  
specialization in science advances. Specialization divides work, and  
thus provides for concentration of individual effort. Just as the  
division of labor is a law of social development, so in science is  
progress necessarily dependent on specialization. Even the develop-  
ment of an organism from the egg, depends upon the same principle—  
~~the physiological division of labor~~. In fact the law of progress is  
everywhere the same, whether in the political, social, scientific, or  
organic world.

If for the sake of more and better results, work must be di-  
vided, and the workers <sup>restricted</sup> limited to what each is best fitted for, it is  
obvious that a new necessity arises—the necessity of keeping the  
workers in touch with one another. Investigat~~ors~~ cannot work to ad-  
vantage in complete isolation, and the results of individual effort  
can never have their full value except in coordination with the re-  
sults obtained by fellow-workers. The work of one investigator  
sheds light upon, and is, in turn, illuminated by, the work of others.  
Each work~~s~~, not alone for himself, but for his co-workers, as well, and  
so enjoys the fruit of his own labor while sharing it with his fel-  
lows and receiving from them compensatory returns from the products  
of their industry. Division of labor is thus a means to an end, not  
the end itself; and it is entirely compatible with unity in final re-  
sults. Every year's advance emphasizes more and more the community  
of interest among specialists, and makes clearer the immense advan-  
tages of centres of work which invite and facilitate association in  
research, and provide conditions that <sup>encourage</sup> ~~keep up~~

~~the~~ active interchange of ideas among all  
~~the~~ investigators

An Address delivered  
at the Annual Meeting of  
The Corporation of The Marine  
Biological Laboratory, Wood's Hall,  
June 12, 1921

~~National and International Centres.~~

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The nearest approach to an ideal centre of <sup>biological</sup> ~~work~~ <sup>in</sup> ~~biology~~, as all the world knows, is the celebrated Naples Station, founded and directed by Anton Dohrn. That station stands for an international centre, a veritable Mecca for the biologists of the world. With such a brilliant example before us, our own need readily defines itself. One international station is sufficient for the present, and were the funds at hand for another, it would be wiser to give them to Naples than to attempt to duplicate that centre, and thus divide resources that would yield vastly more if kept together in the service of a single institution. The same objection does not hold against the creation of national centres. Naples is a long way from us, and hence only a small number of Americans—not more than three or four on an average—work at Naples during the year. The last few years we have had from 50 to 60 investigators at the Woods Holl Laboratory during the summer months. Between 30 and 40 of these are independent investigators, while the rest are beginners working under supervision. This fact suffices to place our need clearly beyond a doubt. Our Laboratory involves no unnecessary duplication, and conflicts in no way with the purposes of the Naples Station. Instead of drawing men and resources from Naples, it has had just the contrary effect. It is only since our Laboratory became a productive centre for biological research, that American tables have been maintained at Naples. The large increase in the number of workers here has tended directly to increase the number of

our *representatives at Naples.*

So general has become the interest in the Naples Station, that our young naturalists are beginning to feel that one or more visits are necessary to respectability; and some of our older naturalists have acquired a sort of migratory instinct which impels them to more or less regular flights.

But while we may claim that the development of this Laboratory has been an advantage rather than a disadvantage to the Naples Laboratory, we must acknowledge that we have received more than we have given. We are deeply indebted for the encouragement and stimulus supplied through the work turned out at Naples, and through the friendly intercourse we have enjoyed.

Our prosperity then adds something—little as it may be—to the work at Naples, and the prosperity of Naples is reflected in a measure in what is accomplished at Woods Holl. There is no crossing of purposes, no unnecessary duplication of facilities, no useless repetition of work; on the contrary, there is concentration at two points so placed as to command many special advantages, and more than double the number of workers.

#### Functions of the two Stations.

The conditions of development have been quite different for the two Institutions. Dr. Dohrn was able to contribute from his own fortune to the foundation of his laboratory, and he was successful in obtaining liberal support from several European Governments, Germany taking a leading part. The chief aim at the beginning was the investigation of marine animals, and this has continued the dominant one, although the field has been extended to Physiology, and Botany.

The international character of the Station, its location, its sources of support, and its original design, all tend to limit its work to pure research, and its workers to experienced investigators. There are no tables for beginners in research; no instruction preparatory to research; no provision for work under the guidance of one or more teachers; no lectures or conferences for the presentation and discussion of the results obtained by individual work. In short the organization at Naples takes no concern for what has always been of primary importance to us, namely, increase in the number of workers. Therein we touch the fundamental difference in the two situations—a difference that explains all other differences. Our teaching is wholly subordinate to investigation, but it has a two-fold creative purpose, in as much as it aims to multiply workers and thereby to multiply work. Had we attempted to follow the plan at Naples, the Marine Biological Laboratory could not have reached its present standing, in less than double the time, and in all probability it would have met the fate of other similar enterprises, in this country, and gone down long ago.

Now just as certainly as we owe our present standing to the policy we have steadily pursued thus far, just so certainly will our progress in the future depend upon moving straight on in an un-deviating course. That does not mean standing still in blind adherence to past ideals, but rather, going forward from the vantage-ground now occupied, ever ready for improvements, but without once letting go the line of our development.

Ever since our work began in 1888, we have had to face the contention that research and instruction cannot advance advantageously together. We have gone on demonstrating and convincing, but still there are some who would not be convinced by any amount of demonstration short of a repetition of the failures that have already been recorded against the adoption of their advice. All the drawbacks that could be charged against instruction at the Laboratory arise, not from any original sin in instruction, but from certain conditions that can be easily remedied, as soon as we have the means. The root of all our evils in this regard has been, not money, but the lack of it. Let our collecting force be raised to a point where it can meet every reasonable demand of investigation<sup>ors</sup>; let our staffs be so organized that the time devoted to teaching will be beneficial to the giver as well as the receiver, and not an impediment, but a wholesome stimulus to research; and, finally, let a permanent laboratory be erected, on the shore, supplied with a library, aquaria, and the requisite facilities for work, and reserved for the exclusive use of investigators; who then would feel that he could not have all the quiet and seclusion his work and nerves would require? Would a lecture going on in a hall a block away arouse an unrestful suspicion that the lecture-importuner was already meditating a visit to the investigator's sanctum sanctorum? and would the soliloquy then be: To lecture, or not to lecture—to tell or not to tell, the secrets of my discoveries—there is the rub. Even to imagine all this is truly unnerving, and it is not quite clear how far away the building would have to be, or of what materials constructed, in order to be both fire and lecture-proof. Doubtless submission and a contribution or two would prove to be the only escape.

The notion that the ideal laboratory excludes instruction is referable, in the main, to certain conditions which will, I trust disappear this year; in some part it is due to a strong faith in the international model--a faith we are all proud to share, but which like all faiths--may become corrupted with unreasoning dogmatism, and thus an obstacle to seeing the essential differences between the two situations.

The international model combines all the charms of a worker's paradise: a library that approaches perfection in arrangement and adaptation to the needs of the investigator; a corps of trained collectors always ready to serve at short notice; a skillful conservator in charge of the material, its distribution and preservation; assistants watchful of every need in the supply of material, reagents, and table equipment; aquaria reserved for individual use, and every facility essential to economy of time and effective work; a scientific staff directing all the administrative functions, and yet finding time for splendid research work in their special fields; a number of investigators who come for a longer or shorter time from different countries, many of whom are distinguished leaders in the biological world. Such are the attractions that enter into the ideal.

With the single exception, that we cannot expect, at present, to draw so select a body of celebrities, every one of these features, and some additional ones, can be realized at Woods Holl. Our memberships will doubtless continue to have a national character; but as it might become international, without any change of condition except the political division of the territory represented, the distinction is not fundamental.

Without going beyond the limits of the United States, we have geographical area nearly equal to that of all Europe, and our scientific territory, taking in all that the Monroe Doctrine or our imperialistic proclivities can lay claim to. We have enough and to spare.

The esprit de corps represented here is something of deeper significance than is generally appreciated. It is well to understand its meaning and heed the conditions of its maintenance. Naturalists who have visited us from Europe have invariably expressed surprise at the research activity shown here, and the general interest taken in the Laboratory. "How is it", said the Director of one of the Marine Laboratories of England, "that the Marine Biological Laboratory draws so many workers together, while we find it difficult to get more than three or four or half a dozen to any one of our laboratories?" The whole secret lies in the fact that we unite research and instruction in reciprocally helpful relations, and thus keep up both interests to a higher level than would be possible in the cultivation of either apart from the other. Our interest in, and devotion to the Laboratory are developed by working together and helping one another. That is our bond of union, the secret of our affection for the Laboratory.

Moreover it is important to remember that this cooperative work has been made possible only by being faithful to certain cardinal principles. Cooperation is not a thing that can be bought with money--particularly if you have no money to offer. It presupposes an object of sufficient importance to command the interest of active workers. The conviction must be strong that the object, if a

attained, will advance the science represented. Every one must feel, too, that he has a direct personal interest in the plan proposed, and that he has a part to perform which will make him a partner in the enterprise. The personal interest will stimulate and measure the sacrifices.

Our object has been to develop a laboratory which would serve as a centre to which we could all come on equal terms, share in the support, the work, the ownership, and the government. Cooperation has been our watchword. In order to secure this, we have striven to uphold the national character of the undertaking, to maintain its independence, and make its work and membership as broadly representative as possible. Naturally, the hope of a lasting and effective cooperation was thought by some to be foredoomed to early disappointment. But it has stood the test of fourteen years, and has met one or two ordeals, always coming out the better for its trials. It has triumphed over every attempt to fetter it with local domination, and has so far justified itself that it must have a controlling influence in all our problems of organization and development.

The incubation period of our Laboratory has been long, and if it now has the good fortune to hatch under auspicious conditions, no one need regret the time and care it has taken to bring it forth, fully prepared to enjoy all the prosperity the new century has to offer. It behooves us, however, to remember that our responsibility does not end with a happy deliverance from the shell, and at the same time, that all our responsibility lies in the welfare of the Laboratory, not in the perpetuation of any personal guardianship.



The difference between advice and supervision is nakedly expressed in the word authority, the very element we desire to keep in the distant background.

If any one imagines that the working forces of this Laboratory are to be lured into any scheme devised to forward the occupation of governors, let him be undeceived. Advice is wholesome, but super-advice is a fish of vulgar habits, that might be exterminated without any loss to our scientific welfare. ~~We waste no halt~~

~~on them.~~

I am sure that we need to take serious warning and to be very vigilant at every step in organization <sup>or</sup> reorganization. We need only the simplest kind of organization--one that will find its whole occupation in providing funds to support our work and in guarding our ideals against all the insidious approaches of that arch-enemy --the authority-seeker. The less officialism the more work. We have no room, need <sup>or</sup> excuse for purely ornamental offices.

I frankly confess that I do not see many urgent needs for even an advisory council, distinct from our faculty or staff. A strong financial board to supply the means and a strong staff to perform the scientific work comprise the essentials. Our investigators are in reality our Advisory Council, and I believe they are better able to direct themselves than any board would be to direct them.

Nearly every function I could name for such a board is well represented in the personnel of the Laboratory. There may be some advantage in a separate board to represent in a formal way cooperative institutions, and aid in the conservation of the national and independent character of the Laboratory.

I am firmly convinced, however, that, with perhaps one exception, the nominating function should be left, where it has always been, with the Director and the staff of investigators, for they unquestionably have the nearest interests in, and the best qualifications for, this responsibility. Both staff and council might act jointly in recommending a Director.

With four bodies to look after the affairs of the Laboratory -- Corporation, Trustees, Staff, and Council -- would it not look a little as if organization were our chief occupation? Is it advisable to exceed actual needs in this direction? Trustees and Staff represent the creative and governing factors. The Corporation is the ultimate <sup>seat</sup> of authority. It includes practically all the (active friends of the Laboratory, trustees, staff, investigators, pupils, donors, etc., and it has always proved a reliable court of last appeal. It represents a biological association, which can be strengthened from year to year, and do much to maintain and extend the influence of the Laboratory. It is a body with no temptations to office-seeking, and quite free from any disposition to meddle or control. Although the ultimate source of authority, it never acts except on the advice of the Trustees and the Staff. It is not a heavy time-consumer, meeting only once a year, for the performance of a somewhat perfunctory office -- the election of Trustees, as dictated by the Trustees, who are thus made a self-perpetuating board. It delegates its authority to the Trustees (but reserves the right to depose. Staff, Trustees, and Corporation are then the creative, the governing, and the conserving factors, and hence essential elements in our organization.