change. It is the same in the simplicity of the germ as in the complexity of the image. It is identical under the differences of male and female. It is the common nature, though no common quality, of germ and somatic cell, and of the elements of the different tissues. Individuals which differ from one another differ by one difference which, however, cannot be described except as an infinite number of differences, and all the features of one individual are one character. This is not the character of the protoplasm, nor of the idioplasm, nor of the immanent soul, but of the whole creature. And this character is no cause or condition amongst others. It is an aspect of all and is that aspect by which all comes into unity."

As thus defined the character, and hence the unity, of the organism is a purely metaphysical conception, wholly removed from the possibilities of research, and for my part I cannot conceive how such a conception can in any way advance our knowledge of organisms or assist us in the study of vital processes.

The basis of the whole criticism is the first postulate, which, in one respect at least, is wide of the truth. This postulate asserts that the qualities of an organism are *absolutely* separate and distinct elements. This, no one I suppose, has ever explicitly assumed or believed. If it were granted that the qualities of the organism are not absolutely independent, that the elements of the germ are related to each other as are the parts of the adult, the foundations of much of the criticism would be removed. But even as it is, the book will serve a good purpose as pointing out certain dangerous tendencies in recent biological speculations, and it should be read by all those who are interested in such speculations or who are in danger of rushing into biological metaphysics. It is a pity that the book is divided into chapters only and that there are no subordinate headings or numerical indices to indicate the subdivisions of the argument, and also that in many places the style is obscure, dogmatic and metaphysical, since with all these evident defects it will hardly obtain the reading which it otherwise deserves.

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*LANGUAGE STUDY.**

From a general consideration of the child's training it becomes evident that the great subjects which are most useful for discipline in the period of secondary education are the mathematical studies on the one hand, which exercise the faculty of abstraction, and the positive sciences, which train the power of observation and require truth to detail. If we should pursue the subject into the collegiate period we should find mental and moral science, literature and history coming to their rights. If this be in the main psychological we see that language study, as such, should have no great place in secondary education. The study of grammar, as has been already said, is very useful in the early periods of development if taught vocally; it brings the child out in self-expression, and carries its own correctives, from the fact that its results are always open to social control. These are, in my mind, the main functions of the study of language.

What, then, is the justification for devoting ten or twelve years of the youth's time to study of a dead language, as is commonly done in the case of Latin? The utility of expression does not enter into it, and the discipline of truth to elegant literary copy can be even so well attained from the study of our own tongue, which is lamentably neglected. In all this dreary language study the youth's interest is dried up

* Extract from *The Story of the Mind* in the press of D. Appleton & Co. (Useful Story Series.)

at its source. He is fed on formulas and rules; he has no outlet for invention or discovery; lists of exceptions to the rules destroy the remnant of his curiosity and incentive; even reasoning from analogy is strictly forbidden him; he is shut up from nature as in a room with no windows; the dictionary is his authority as absolute and final as it is flat and sterile. His very industry, being forced rather than spontaneous, makes him mentally, no less than physically, stoop-shouldered and near-sighted. It seems to be one of those mistakes of the past still so well lodged in tradition and class rivalry that soundness of culture is artificially identified with its maintenance. Yet there is no reason that the spirit of classical culture and the durable elements of Greek and Roman life should not be as well acquired—nay, better—from the study of history, archæology and literature. For this language work is not study of literature. Not one in one hundred of the students who are forced through the periodical examinations in these languages ever gets any insight into their æsthetic quality or any inspiration from their form.

But more than this. At least one positively vicious effect follows from language study with grammar and lexicon, no matter what the language be. *The habit of intellectual guessing* grows with the need of continuous effort in putting together elements which go together for no particular reason. When a thing can not be reasoned out, it may just as well be guessed out. The guess is always easier than the dictionary, and, if successful, it answers just as well. Moreover, the teacher has no way of distinguishing the pupil's replies which are due to the guess from those due to honest work. I venture to say, from personal experience, that no one who has been through the usual classical course in college and before it has not more than once staked his all upon the happy guess at the stubborn author's meaning. This shallow device becomes a substitute for honest struggle. And it is more than shallow; to guess is dishonest. It is a servant to unworthy inertia; and worse, it is a cloak to mental unreadinesss and to conscious moral cowardice. The guess is a bluff to fortune when the honest gauntlet of ignorance should be thrown down to the issue.

The effects of this show themselves in a habit of mind tolerated in persons of a literary bent, which is in marked contrast to that demanded and exemplified by science. I think that much of our literary impressionism and sentimentalism reveal the guessing habit.

Yet why guess? Why be content with an impression? Why hint of a 'certain this and a certain that' when the 'certain,' if it means anything, commonly means the uncertain? Things worth writing about should be formulated clearly enough to be understood. Why let the personal reaction of the individual's feeling suffice? Our youth need to be told that the guess is immoral, that hypothesis is the servant of research, that the private impression instructs nobody, that presentiment is usually wrong, that science is the best antidote to the fear of ghosts, and that the reply 'I guess so' betrays itself, whether it arise from bravado, from cowardice, or from literary finesse! I think that the great need of our life is honesty, that the bulwark of honesty in education is exact knowledge with the scientific habit of mind, and, furthermore, that the greatest hindrance to these things is the training which does not, with all the sanctions at its command, distinguish the real, with its infallible tests, from the shadowy and vague, but which contents itself with the throw of the intellectual dice box. Any study which tends to make the difference between truth and error pass with the throwing of a die, and which leads the student to be content

with a result he can not verify, has somewhat the function in his education of the puzzle in our society amusements or the game of sliced animals in the nursery.

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THE WORK AT THE BIOLOGICAL LABORATORY OF THE U. S. FISH COMMISSION AT WOODS HOLL.

Three months ago the United States Fish Commission announced that its Biological Laboratory would be reopened; that it would be equipped for investigation; that men of science would be welcome, and that every effort would be made to collect all needed material, and to furnish, within certain limits, all necessary instruments and apparatus for research. The Station is the most extensive plant for the study of marine life and practical fish-culture in the world. There are four buildings: The Hatchery, Laboratory and Aquarium; the Residence; the Shops and Store House; and the Power House. It is in possession of a small fleet of steam and sailing vessels, and by special enactment the officers are empowered to use, at their discretion, any means for the capture of fish or other marine organisms.

The Commission has refurnished the Biological Laboratory and added ten new rooms for research. It has equipped a laboratory for physiology. It has purchased a bacteriological outfit, and a creditable library of biology and fish-culture has been installed. Two steam launches and the schooner Grampus have been attached to the Station, several fine-mesh seines, trawls and tow-nets have been purchased, and a large fish-trap has been placed at a favorable locality.

From the day of the opening of the laboratory, April 1st, several tables have been continuously occupied, and, at the present time, the scientific force numbers twenty-four. Several have expressed the desire of extending their work during the autumn and winter months, and it is proposed to keep the laboratory open throughout the year.

The Commission does not attempt to instruct or to dictate as to what lines of research are to be pursued, how the work shall be carried on, or where the results shall be published. It is convinced that all lines of biological research are indirectly, if not also directly, helpful to its more immediately practical work, and it happens that fully one-half of the investigators are now busy with problems bearing directly upon the anatomy, embryology, physiology and pathology of fish. The large corps of collaborators has made it possible to secure definite data respecting the breeding habits of many marine forms. The floating-fauna has been systematically examined; valuable information has been gained respecting the larval life of the star-fish, the developmental stages of the clam, the rate of growth of the scallops, the causes of mortality of lobster fry, and the pathogenic bacteria infesting fish.

With the cooperation of the Marine Biological Laboratory, it is proposed to make a series of synchronous observations on the temperature and floating fauna of Vineyard Sound. The combined vessels of the two laboratories provide a sufficiently large fleet to make these observations of special interest. It is also proposed to resume again the deep-sea work begun by the Commission many years ago, though the temporary use of the Fish Hawk by the United States navy will prevent the work from being undertaken the present season.

H. C. Bumpus.

ZOOLOGICAL NOTES.

PUBLICATIONS OF THE AMERICAN MUSEUM OF NATURAL HISTORY.

The Report of the American Museum of Natural History, New York, for 1897, re-