forces between colliding atoms depends on the nature of the atoms and hence the pressure shift is different for different substances?[1]

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May 3, 1920

ANOPHELES LARVÆ IN SALT WATER

DR. F. E. CHIDESTER in SCIENCE, Vol. LI., No. 1314, presented some interesting data on the occurrence of certain North American *Anopheles* in brackish water, and referred to Professor Smith's account, which was published in 1904, and which "has been either ignored or discredited."

It may be of interest to call attention to some other *Anopheles* which live in brackish water and which are not included in Dr. Chidester's account. In my paper on the behavior of certain of our Canal Zone *Anopheles* (*Annals Ento. Soc. of America,* 1915, page 235) I gave the chlorine content of samples of water from which larvæ of *Anopheles albimanus* Wiede, *A. tarsimaculata* Goeldi and *Ædes taeniorhynchus* Wiede, were taken. These samples had from 11,250 to 23,500 parts of Cl per million. Considering sea-water as having 22,000 parts of Cl per million, these samples represented from 51.1 per cent. to 107 per cent. of sea-water. There were 38 samples all told, the average Cl content being 15,817 parts per million, or equaling 72.0 per cent. of sea-water.

We get most of our *A. tarsimaculata* from the lowlands at both ends of the Panama Canal.

JAMES ZETEK

ANCON, C. Z.

QUOTATIONS

THE LISTER INSTITUTE

THE Lister Institute of Preventive Medicine was founded in 1891, in honor of Lord Lister, to conduct scientific inquiries tending to prevent disease. The attachment of a hospital to the institute was specifically excluded by the articles of association, possibly to secure support from the many leaders of medicine who were on the staffs of existing hospitals, and possibly, also, because the intimacy of the union between clinical work and research was not sufficiently realized. By 1914 it had become plain that research could not be conducted with full advantage unless it went hand in hand with clinical opportunity. The experiences of the war drove home the lesson. Members of the staff of the Lister Institute and many other physicians and surgeons engaged on the battle-fronts, at base hospitals, or at military hospitals in this country, found that the immediate task of healing the sick not only advanced abstract knowledge, but set new problems for research. The governors of the institute have resolved unanimously to make the requisite changes in the articles of association. A convenient site for the proposed hospital lies adjacent to the institute. The council of medical research is the channel through which funds provided by the state are allotted to universities and research institutes, and it is to that body that the appeal is addressed. The proposed hospital need not be large. Its beds would be filled with selected cases, varying from time to time according to the specific inquiries that were being made. There would be relief to the general hospitals rather than rivalry with them. The experience of the Pasteur Institute in Paris and of the Rockefeller Research Hospital in New York shows that patients selected for a special purpose take an interest in their involuntary contribution to the advancement of knowledge, and rejoice that their own misfortunes may be the source of relief to others. They are certain of getting treatment even more considerate than that of a general hospital, and they have the advantage of not being the object-lessons of clinical teaching.—The London *Times*.

SCIENTIFIC BOOKS

Pasteur, The History of a Mind. By EMILE DUCLAUX. Translation by Erwin F. Smith and Florence Hedges.[1]

Both the French publication and this trans-

[1] A translation with annotations and additions of the original work, "Pasteur: Histoire d'un esprit," which appeared in 1896.

lation are unusual books. The conception is not that of a mere biography of Pasteur. It is, indeed, that in part, but Duclaux undertook the greater and subtler thing, an interpretation of the master mind, the dominant soul, the "histoire d' un esprit." His success in this is the thing which gave remarkable power to the French edition. While perhaps, as the translators state, something of the verbal force and charm of the original is inevitably lost in its transfer to English, yet there are in this translation some noteworthy gains which to the reviewer are fully compensatory.

In the first place, this English edition contains probably the finest and certainly the most complete series of portraits of Pasteur that has ever been published. There are fourteen of these, picturing him from early manhood to his later maturity. Pasteur's face and especially his eyes were unusually expressive and one traces in these portraits almost more surely, and certainly more quickly, than in the text the traits or moods belonging to the different periods of his life—the student, the crusader, the laureled victor.

Pasteur's life was dramatic. This was recently brought out with remarkable vividness by the French playwright Sacha Guitry.[2]

Duclaux in his "histoire d'un esprit" with a dramatist's skill selected successively the epochal events which crowded in succession through Pasteur's career from his apprenticeship days in l'école normale at Paris. These author's pictures serve also to portray vividly the direct bearing of Pasteur's early training in physics and especially in chemistry upon his later work on fermentation and other aspects of bacteriology. The reader is shown with almost kaleidoscopic abruptness first one picture then another, yet always with a dramatic unity since Pasteur is always the central figure. It is first Pasteur's works in crystallography, then in lactic and alcoholic fermentation, spontaneous generation, wines and vinegars, diseases of the silkworm, yeasts and brewing, etiology of microbial diseases, and finally the evolution of his work on viruses and vaccines including his studies on chicken cholera, rabies and the problems of immunity.

In this way the reader is given a synoptical survey of the period which marked the transition from the dominance of Liebig's chemical theories of fermentation to the full acceptance of the modern organic conception, *i. e.*, from the dominance of philosophical empiricism in biology and medicine to the full acceptance of the modern leadership of the laboratory investigator, trusting only the experimental method.

Duclaux's fitness for the task of portraying this with such remarkable vividness in so compact a volume is clearly shown in the senior translator's introduction of some thirty pages, which is a valuable contribution to the literature of biological history. It is prefaced by a portrait of Duclaux showing his alertly intellectual face at about the period 1897, when, upon the death of the master, he succeeded him as director of the Pasteur Institute, and is followed by another showing the careworn man in the last year of his life.

In this preface one traces Duclaux's intimate relationship with Pasteur from his enrollment as a student in the normal school at Paris in 1858 where "the master" was in charge of chemistry and the related scientific studies to the death of Pasteur in 1895—37 years. Here he and the other young laboratory assistants played their part as armor bearers in the heroic times of the early Pasteurian struggle. "The master was in the forefront of the conflict over molecular dissymmetry in crystals, the campaign on fermentations and the great battle over spontaneous generation." Duclaux, who was himself trained early as a chemist, analyzes Pasteur's mental attitude on these questions with keen facility. Nor can we overlook the fact that this English edition has been enriched throughout because of the like fitness of the translators for their task. Smith has always been chemically minded in his approach to his bacteriological problems. Moreover, while Duclaux is a remarkably well in-

[2] Sacha Guitry, Pasteur. Pièce en 5 actes. La Petite Illustration Théatrale. March, 1919.

formed chronicler and a sympathetic interpreter of Pasteur, it is doubtless true that Smith represents a type of mind and workmanship much more like that of Pasteur himself. He, like Pasteur, has fought the pioneer's battles and keenly relished the fray. One who knows this is prepared to find everywhere, in the introduction, in the translator's notes which are scattered through the book and especially in the annotations at the close a certain flavor quite other than Duclaux himself could impart.

The translation is avowedly addressed to the younger generations of American scientists who are liable to forget the dramatic conflicts through which were won the ways to the higher and freer conceptions which they have inherited. For this reason the book (and the translation better than the original) should serve admirably as a reading book about which a seminary may be conducted with students desiring to trace the history of biological thought during the last century. The reviewer proposes so to use it. For such purposes there is much gained through the addition by the translators at the close of the book of an annotated list of all persons to whom reference has been made in the text. Here as elsewhere there is evidence of those intimate, highly individualistic, personal touches through which Duclaux and Smith in combination have served to reflect so much of the dominant individualism of Pasteur.

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NOTES ON METEOROLOGY

THE DISTRIBUTION OF MAXIMUM FLOODS

In an interesting paper read before the American Meteorological Society at its New York meeting, January 3, 1920, Professor A. J. Henry[4] analyzed the flood records of many of the streams of America and Europe with a view to determining their time and space distribution, and, if possible, any systematic or cyclic recurrence.

[4] "The Distribution of Maximum Floods," *ibid.*, pp. 861–866.

For the purpose of his discussion, Professor Henry has used the "average annual flood," which is defined as "the arithmetical mean of the annual floods for a number of years"; also the "maximum flood" which is that caused by excessive run-off when the rainfall is sufficient to raise the ground storage to a high level and thus saturate the soil, or when a warm rain falls on a snow cover; and finally, the "absolute maximum flood" which is the greatest reported for a given station. It is important to know what the absolute maximum flood magnitude is for a given place, and to know whether that maximum has been reached. Says Professor Henry:

> It can not be too strongly emphasized that the occurrence of the absolute maximum flood is usually conditioned upon the synchronism of certain climatic events which in themselves have no fixed law of occurrence. Very intense rainstorms are seldom long continued and of great extent. The heavy summer showers that occur in the United States being limited in area may cause an extraordinary flood in a small watershed, and doubtless many such floods occur in some part of the country annually. These extreme floods in small streams are completely absorbed as soon as they reach the trunk stream.

To the end of determining any relation between the absolute maximum and the average, the ratios of these two values have been tabulated for 45 of the principal rivers of the United States. The agreement of the various ratios is, as the author remarks, "better than was expected," amounting in general from 1.3 to 1.5; that is, the absolute maximum flood was 1.3 to 1.5 times the annual average. There are a number of ratios of greater magnitude, but, in most cases, this is accounted for either in the nature of the watershed, or the local conditions surrounding the gaging. Small ratios are found at places where overflow takes place easily and the river may greatly increase its cross-section.

There appears to be no cyclic distribution of floods but "that the dominating control is rainfall, and since there may be one, two or even three years of excessive rainfall, it follows that great floods may likewise occur