

— E. & F. N. Spon announce as in preparation, "Practical Electrics," a universal handybook on every-day electrical matters, including connections, alarms, batteries, coils, dynamo-machines, motors, phonographs, telephones, etc., reprinted from the third series of "Workshop Receipts;" "Treatise on Evaporation by the Multiple System in Vacuum, its Construction and Working in Sugar Factories," by James Foster; "Experimental Science: Treatise on the Various Topics of Physics in a Popular and Practical Way," by George M. Hopkins; "The Steam Engine and the Indicator," by William B. Le Van; and "A Practical Treatise on Mine Engineering," by G. C. Greenwell, F.G.S., third edition, reprinted from the second.

— The eighth edition is in preparation, to be ready in January, of "The Electrician," electrical trades' directory and handbook for 1890 (corrected to December, 1889). This will contain a carefully compiled list of British, colonial, and foreign electricians, electrical engineers, electric-light engineers and contractors, electrical-apparatus makers, electric-bell makers and fitters, electric-light, telegraph, and telephone companies, electric-light, telegraph, and telephone engineers, wire makers and drawers, and of all persons engaged in electrical pursuits throughout the world; useful tables relating to dynamos, arc and incandescent lamps, batteries, etc.; and a biographical section, giving interesting particulars concerning eminent men connected with electricity in all its applications, with portraits. Full particulars will be sent immediately on application to "The Electrician" Office, 1 Salisbury Court, Fleet Street, London, E.C.

— D. C. Heath & Co. of Boston have issued "An Introduction to the Study of Shakespeare," by Hiram Corson. It does not cover all the ground that an introduction ought to cover, for it gives no account of the dramatist's life, nor of the state of the English drama in his time; and many other points necessary to a thorough understanding of Shakespeare are left unnoticed. Still it presents a good deal of matter in a concise though not very artistic style. There is quite an elaborate discussion of Shakespeare's verse, and many pages of textual criticism, the latter of which seems hardly appropriate in an introductory work. But the greater part of the book is taken up with literary criticisms on certain of the plays, — "Romeo and Juliet," "Macbeth," "Hamlet," and others. In these criticisms Professor Corson expresses strong dissent on certain points from the views of Coleridge and the German critics; but we have no space to discuss the questions thus raised, and must refer the interested reader to the book itself.

— The division of ornithology and mammalogy of the United States Department of Agriculture is engaged in mapping the geographical distribution of birds and mammals, in addition to the study of their economic relations. The purpose of this work is to ascertain the boundaries of the natural faunal areas of North America. The original information on which the maps are based is collected mainly by the special field agents employed by the division. A smaller portion is contributed by voluntary observers. In the progress of the work many new facts are obtained which ought to be put on record for the benefit of other workers in this department of science. It is not unusual to find new species in the collections made by the field agents of the division, and such species must be named and assigned their proper systematic position before they can be discussed intelligently. It is evident that the results of the investigations of the division are of importance to two distinct classes of readers, — farmers and naturalists. It is deemed desirable, therefore, to publish such of the results as are of use mainly to those engaged in scientific research separately from those of a more purely economic character. The publication of the economic material being already provided for (and appearing as bulletins and reports), it has been decided to publish a series of faunal papers, under the title "North American Fauna." This publication will contain, in addition to the faunal papers proper, such technical matter as results from the study of the material collected, or as may be necessary to an intelligent understanding of the reports which follow. No attempt will be made to issue the separate numbers at regular intervals, but each number will bear date of actual publication. The first of the series is "A Preliminary Revision of

the North American Pocket Mice" (genera *Perognathus* et *Crice-todipus* auct.), with descriptions of new species and subspecies, and a key to the known forms, by Dr. C. Hart Merriam. This contribution toward a revision of the North American pocket-mice is the outgrowth of a recent attempt to identify a large number of specimens for the purpose of mapping their geographical distribution. The results are wholly unexpected. Only six species were previously recognized. This number is here increased to eighteen. Three subspecies also are described, and several well-known names are shifted to forms other than those to which they have been heretofore commonly applied. The present revision of the group is by no means exhaustive: it is intended merely as a foundation for future study.

LETTERS TO THE EDITOR.

*.*Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.

The editor will be glad to publish any queries consonant with the character of the journal.

On request, twenty copies of the number containing his communication will be furnished free to any correspondent.

The Various Discoveries of Lake Mistassini.

IN being persistently discovered, the now unmythical Lake Mistassini has a record not surpassed by the "true" source of the Mississippi. If the lake in question were some recent upstart, grovelling in quaternary detritus, one might pardon such unseemly conduct; but a severed body of water, quietly slumbering in Archæan rocks, has a right to resent such intrusions on its privacy. Furthermore, it is a sacred lake, dedicated to the Great Spirit; for on its bank, one historian informs us, there were found "*autre curieux de marbre d'environ 30 à 35 pieds en quaré; sa route est de 8 à 9 pieds de haut. Les sauvages l'appellent Tchichi Manitou Quitchonap, la maison du Grand Esprit*" (sic).

Its first discovery, more than two hundred years ago, is forgotten except to the dusty pigeon-holes of the Department of Crown Lands. Its last gestation required the combined services of half a score of explorers and a great metropolitan journal to exploit it. In the mean time, still another journal which is daily read by more than a quarter of a million of people was frantically demanding to be informed whether the lake had an actual existence, or whether, like the fountain of perpetual youth, it lay just beyond the end of the rainbow.

Briefly stated, Lake Mistassini was discovered by Father Abanel, a Jesuit, in 1672. It appears on Franquelin's map of New France ("Carte de l'Amerique Septentrionale") under the name of "Lac Timagaming." On this map the shape of the lake is fairly shown, and the long peninsula at the southern end is clearly recognizable. Generally the outlines of the lake, though roughly charted, are tolerable accurate. Franquelin seems to have been a competent topographer, and the slopes and drainage of the country surrounding the lake are reasonably correct. The Heights of Land (*Hauteurs des Terres*), or divide between the St. Lawrence and the Arctic basin, are correctly charted. The outlet of the lake, Rupert River, is followed to Baye du Nord, now called "James Bay." On his map there appears a lake much larger than Lake Mistassini lying to the south-west. This, in all probability, is Lac St. Jean of Père Laure's map; it is, however, greatly exaggerated.

Père Laure, a Jesuit missionary who explored the region about fifty years afterwards, was a man of far more than ordinary ability. He may not have been a trained surveyor, but his keen perception and faithful work more than balance any lacking in that direction. He explored and mapped a large part of the region between the Gulf of St. Lawrence and James Bay, and his manuscript map is now in the archives of the minister of marine, in Paris. The map herewith presented is reproduced from a tracing of a portion of the original. As late as 1866, a reproduction of this map appears in a work by Father Charlevoix. Still more recently, the "Atlas de Géographie Militaire," compiled for the Military Academy at San Cyr, contains a map of a part of the Dominion of Canada, evidently edited from Father Laure's map.

Less than ten years since, Lake Mistassini was again ruthlessly disturbed by a discovery. This time its dimensions were enlarged

until it surpassed Lake Superior in size. In 1884 Mr. John Bignall of the Geological and Natural History Survey was ordered to complete an unfinished survey of the lake; and his work, essentially finished, appears in the report of Mr. A. P. Low, also of the Geological Survey. A carefully reduced copy of Mr. Bignall's map is herewith presented; some of the details, however, having been omitted for want of space. A casual inspection shows that not only is Lake Mistassini insignificant compared to Lake Superior, but also that it is not comparable even to Lake Ontario in size. In examining the maps of Mr. Bignall and Father Laure side by side, the differences are not so great as one might imagine. The salient features are alike in both, and the one is easily reducible to the other. The foreshortening in the latter probably arose from placing too much reliance on the appearance to the eye. Every topographer who has plotted a similarly shaped object, guided by the eye only, knows that it is extremely difficult to avoid such distortion.

The axis of the lake in Father Laure's map is certainly out of its proper angle; but, if we allow about 30° for variation of the compass, this objection disappears. It is hardly probable that at that early date Father Laure should have any means of estimating the

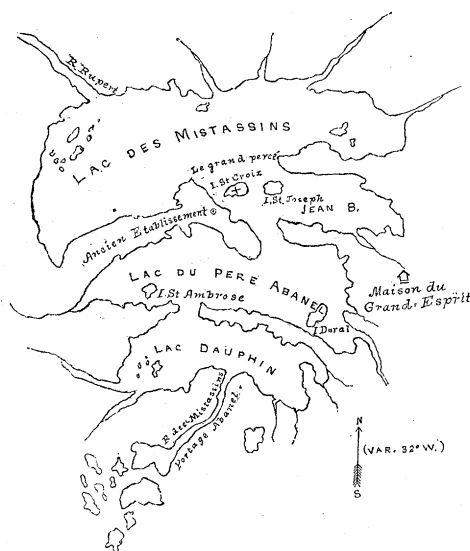
Ptomaines and Leucomaines, and their Relation to Disease.

SEEING the article in *Science* of Oct. 18 induces me to send you this. It was published in a local medical journal (*Pacific Medical Journal*, September, 1889), but I should be glad to give it wider circulation.

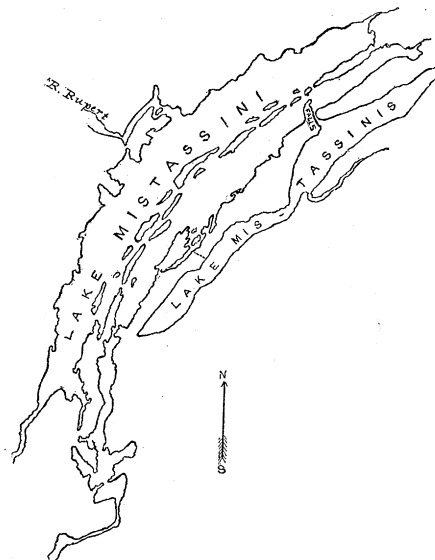
Some recent notices in regard to the composition of leucomaines, and suggestions as to their probable relation to disease (*American Microscopical Journal*, vii. p. 216, 1888; *Science*, xii. p. 335, 1888; *Revue Scientifique*, xliii. p. 187, 1889), have induced me to embody some reflections of my own on this subject.

There is no longer any doubt that the announcement and general acceptance of the germ theory of disease constitute one of the greatest epochs in the history of medicine. But as in the case of all great truths, so in this, the first ideas on the subject have had to be greatly modified: the first extravagant hopes have been disappointed or deferred, and the first claims of its advocates found to be too sweeping.

At first it was imagined that all the grave symptoms of a germ disease, and the death of the patient, were due directly to the presence and multiplication of a specific microbe in the same sense as



Extrait de la Carte du Domaine du Roi en Canada, du Reverend Père Laure, Jésuite, 1731.



Map of Lake Mistassini reproduced from the official surveys of Mr. A. P. Low, Geological Survey of the Dominion of Canada, 1886.

REDUCED COPIES OF THE MAPS OF MR. BIGNALL AND FATHER LAURE.

variation of the compass, or that such a factor should enter into his calculations; so that, on the whole, there are but very few discrepancies between the two maps that cannot be reconciled.

Furthermore, except the direction of the axis, there are no differences between the outlines as shown by the two maps that might not have resulted from the natural erosion of the basin and the corrosion of its outlet. "Rivers," as Gilbert aptly remarks, "are the mortal enemies of lakes;" and it is not reasonable to suppose that Rupert River is an exception to the rule. "Le grand percé" of Father Laure's map has been degraded to a narrow gash, and it is by no means improbable that the level of the water has been considerably lowered by drainage. Indeed, the fall between the adjacent lakes renders such an hypothesis highly probable, for a feature of such importance would not likely have passed Father Laure's notice. Lac Dauphin has disappeared, — possibly from having been drained, — and the long chain of islands traversing the centre of the lake bears further testimony to the lowering of the water in recent times. Unfortunately, Father Laure gives no estimate either of the depth or of the area of the lake, beyond the allusion "*d'environ 300 lieues de tour*;" so that a comparison of these elements at the two different dates is impossible.

It goes without saying that the lake bears every indication of glacial origin, and the severe winters of the present age cannot fail to leave their traces on the outlines of the lake, even from year to year.

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the destruction of fruit trees and field-crops is sometimes due to the ravages of insect-pests. The first great modification of this original idea was, that the disease and death in these cases are not due directly to the microbes, but to the accumulation in the blood (or on the mucous surfaces to be absorbed into the blood) of a poisonous chemical substance, a by-product of microbial multiplication. These by-products of albuminoid fermentation (for there are many kinds) have now been isolated from their microbial culture-fluids and analyzed. They may be regarded as alkaloids of albuminoid decompositions, and are called ptomaines. They are most of them deadly poisons. Septic poison, which is the by-product of putrefactive fermentation, i.e., of the multiplication of putrefactive bacillus, is the most familiar example.

The fact of a poisonous by-product of disease-germ multiplication ought to have been anticipated; for every form of fermentation has its peculiar chemical by-product, and many of these are poisonous. The different kinds of alcohol, ethylic, amylic, etc., and different kinds of organic acids, such as lactic, acetic, butyric, etc., are familiar examples. It would be strange indeed if the same were not true of albuminoid fermentations determined by the growth and multiplication of disease germs. As already said, some of these chemical by-products of disease germs have been separated from their generating microbes (as alcohol may be separated from the yeast-plant); and, by the inoculation of these pure chemical products, the corresponding diseases have been produced.