

and 1900, shows that the lake had silted up 48 per cent. of its original storage capacity; that when reduced to a square mile base there was in 1893 a storage capacity of 81 feet in depth, but in 1900 only 42 feet. This result, reached in the space of $6\frac{2}{3}$ years, gives an average of 5.8 feet of silt per year on the mile base. According to the laws of silting the deposit was for the first year 7.5 feet, for the second year 6.9 feet, for the third year 6.2 feet, etc. The silt in the upper two miles of the lake is mostly sand, while that of the lower two-thirds is composed of a fine, impalpable, absolutely gritless deposit. The Colorado River flows through a hilly country for hundreds of miles, and is not a heavy silt-bearing stream except on the Red Fork.

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THE ACADEMY OF SCIENCE OF ST. LOUIS.

At the meeting of the Academy of Science of St. Louis of March 5, 1900, forty-two persons present, the following subjects were presented: 'An Annotated Catalogue of the Muricidae,' by Mr. F. C. Baker, was presented by title.

A paper by Professor A. S. Hitchcock, entitled 'Studies on Subterranean Organs.' II. 'Some Dicotyledonous Herbaceous Plants of Manhattan, Kansas,' was presented in abstract and illustrated by specimens.

Mr. J. S. Thurman addressed the Academy on 'Liquid Air,' tracing the history of the liquefaction of gases and in particular the success reached in liquefying air since this result was first achieved in 1877 by Pictet and Cailletet. The possibilities of the utilization of liquid air as a motive power and an explosive, and its employment in medicine and as a disinfectant, were passed in analytic review by the speaker, whose conclusions were that there seemed no present probability of its useful application either as a disinfectant or a motive power. In medicine and for certain purposes requiring the use of explosives it was stated to be not impossible that it would ultimately find useful application, although its prospects as an explosive did not seem very promising.

Four persons were elected active members of the Academy.

WILLIAM TRELEASE,

Recording Secretary.

ANTI-PLAGUE INOCULATION.

THE Indian Plague Commission have made public through the India office part of their report, including the following paragraphs in regard to anti-plague inoculation:

With regard to the feasibility of adopting a general policy of inoculation, our conclusion may be set forth as follows:

(1) Experience gained hitherto has shown that it is very seldom possible to get a large proportion of the inhabitants of an uninfected place inoculated.

(2) It has been possible, where the inducement of exemption from segregation and eviction has been offered, to get a large proportion of the inhabitants of an infected place inoculated quickly.

(3) It has been possible in one place—Mysore City—even where no inducement that touched the great mass of the people could be offered, to get a considerable proportion of the inhabitants of an infected place inoculated quickly.

(4) It has been possible also to induce a large proportion of particular communities, such as the Khojas of Bombay and Karachi, to be inoculated under the influence of their leaders.

Our recommendations are governed by those conclusions, as well as by the conclusions we have already drawn with regard to the protection conferred by inoculation. They are further governed by the consideration that it is necessary, as far as may be possible, to dispel the particular objections on account of which the people have hitherto refrained from inoculation. Moreover, our recommendations are based on the consideration that it is advisable to make the operation as effective as possible, as little inconvenient as possible to the person inoculated, and as easily carried out as possible by the inoculator.

I. We have already insisted on the necessity for the accurate standardization of the vaccine, as being essential to the attainment of the best results, both as to the protection conferred and as to the duration of that protection. We have pointed out, also, that the introduction of an accurate system of standardization may possibly obviate the necessity of employing two successive inoculations.

II. With a view to dispelling the natural

fears of the people and avoiding all unnecessary risk to the inoculated, and, further, with a view to enabling the inoculations to be carried on with the least possible amount of attendant inconvenience, we would insist upon the necessity that stringent precautions should be taken to insure that all the vaccine used is quite free from contamination, and we would recommend that the volume of the necessary dose should be made as small as possible.

III. With a view to removing any possible ground for distrust as to the conveyance of disease by inoculation from one person to another we would recommend that the syringe should be sterilized in the presence of the person about to be inoculated.

IV. We are of the opinion that inoculations, under the safeguards and conditions stated above, should be encouraged wherever possible, and, in particular, it seems to us desirable to encourage inoculation among disinfecting staffs and the attendants of plague hospitals.

We cannot bring to a conclusion this consideration of anti-plague inoculation by Mr. Haffkine's prophylactic fluid without expressing our sense of the importance of the method which Mr. Haffkine has devised and of the results which have been achieved by it. The credit due to Mr. Haffkine is the greater because the difficulties with which he had to contend in this matter could only have been overcome by great zeal and endurance. Mr. Haffkine's work on anti-plague inoculation, while not based on any new scientific principle, constitutes, it seems to us, a great practical achievement in the region of preventive medicine.

SPIRIT-LORE OF THE MICRONESIANS.

RECENTLY the director of the ethnographic division of the royal museums at Berlin has returned from a prolonged visit to the Sunda islands, Micronesia and Melanesia, and is now able to give to the world the multifarious results of his observations and researches. Micronesia had heretofore been studied in part only, as far as its ethnography is concerned, and it was chiefly the Pelew islands that had attracted a share of attention from German scientists; although the Mariana islands had been consid-

ered also. Research has now been made much easier by the number of colonies which Germany has established in this insular domain.

The entire group of the Carolinian islands, with a native population of about 30,000, is what Director Adolph Bastian chiefly describes in his recent publication, '*Die mikronesischen Colonien aus ethnologischen Gesichtspuncten*,' Berlin, 1899. Octavo, pp. 7 and 370. To begin with, Dr. Bastian gives a sketch of the social life of the Pelew nation, of their chiefs, notables and government. Then follow his observations on mortuary rites, their theories about death, the soul after death and the mutual intercourse of souls. Then are discussed Malay theories of black and white magic (whatsoever this may be), of demonology, the tutelary genii, the creation of the world, evolution and what we call the infinite. The demonology is among the Malays weird and fantastic, as might be expected, but also highly poetical and full of originality. For many years back the white race has been informed of the religious views and mythology of the Maori, the Samoa, Tonga and Mangaia islanders, and there is no denial of the fact that the cosmogony and spirit-worlds of these natives are as grand in their conception as those of many peoples of European antiquity. Their systems of the world and of after-life come very near the metaphysical, and when the European who transmits these views to us is himself a philosopher, or at least a thinker, he will make the Malay systems appear to us so much the more philosophical. Dr. Bastian, being a votary of the comparative method in ethnology, has for every myth, custom or belief a score of parallels ready, which he takes from Mediterranean, African, American or any other tribes or nations of the globe, or historic comparisons of beliefs from Greece, Rome, Mesopotamia, China, or Mexico. Anyone able to follow Bastian in his vast amount of reading (his quotations of sources are *summary* and therefore of little use), will undoubtedly derive benefit from what he states. But these statements are given in a manner that is too chaotic and profuse and most readers find it too difficult to follow the thread of his argumentation.

Oracles through whistling are found throughout these islands. Their main gods transmit