

The results of this journey are confirmed and supplemented by the observations of the Pundit A-K, who visited Lhasa, and, continuing his journey farther north, reached Tsaidam.

In 1884 and 1885 Prejevalsky accomplished his fourth journey in Tibet. From Kiachta he went to the Chinese city of Sining, east of the Koko Nor. Having arrived in eastern Tsaidam, he left all his superfluous baggage under the charge of seven Cossacks, while he and his companions, a party of fourteen, started to explore the sources of the Hoang-Ho, which is situated in a plateau from 14,000 to 15,000 feet in height. Travelling south, Prejevalsky crossed the divide between the Hoang-Ho and Di Chu, the source of the Yangtse-Kiang, at a height of 14,500 feet, and, on entering the basin of the Di Chu, came to a country alpine in its character, but without forests, possessing, however, a rich and varied herbaceous flora. From here he returned to Tsaidam, and, turning west, made the important discovery of the 'Valley of the Winds,' which gradually rises to an easy pass across the Taguz Daban Mountains, leading to Cherchen. This pass, and the route from Sha-chau along the foot of the Altin Tagh, were the caravan routes used in former times in the trade between Turkestan and China. From here he paid



FIG. 2.—SALT MARSHES IN TSAIDAM.

another visit to the Lob Nor, and then returned to Russia by way of Cherchen, Kiria, and Khotan.

Our map shows the important results of these journeys; but besides this, other recent researches have been made use of in constructing the map. The sources of the Irawadi and the adjoining parts show Colonel Woodthorpe's explorations. The north-western part is from the Indian Trigonometrical Survey map of Turkestan, but corrected according to the recent Russian surveys on the Pamir and the adjoining regions, and to the surveys of the Afghanistan Boundary Commission, as far as they have been published.

## HEALTH MATTERS.

### Health in Schools.

THE Medical Society of the State of New York voted at its annual meeting to distribute fifteen hundred copies of the essay of Dr. A. N. Bell, on the physiological condition and sanitary requirements of school-life and school-houses, which received the Merritt H. Cash prize at the annual meeting held in February. These additional copies are intended for the school-officers of the State, and if read, and the advice therein given is put into practice, much good will result. The essayist opens by calling attention to the plasticity of every living organism during the early period of its existence, and to the liability of causing constitutional weakness, or even a diseased state, if a young person of originally healthy constitution be subjected for a considerable period to such injurious physical conditions as tend to produce a modification of type. All the phenomena of maintaining a living existence are accomplished by the process of nutrition. The parts played by respiration and the blood in this process receive due attention from the essayist; and the

nervous system, including the brain, is concisely described, both as to structure and function.

In speaking of the age at which children should be sent to school, Dr. Bell says children differ greatly in their powers of resistance to injurious influences, as do adults, though incomparably more susceptible to them: hence to fix upon the age at which school-life may be commenced involves the consideration of the kind of school-life as well as the adaptation of the child. The first and central fact to be constantly kept in view in conducting school-life is the plastic property of the child's mind. This fact being always uppermost, healthy children, at the age of about seven years, may safely begin to learn the alphabet, spelling, and figures, on the kindergarten system, giving them not more than two or three hours' application daily, with not less than half of the time, at equal intervals, for play; provided, always, the sanitary conditions of the school-room are duly regarded. At the age of about ten years, systematic education may be commenced; but up to the age of puberty, the school-time should not be more than six hours daily; and no child should be required to devote more than half of the time of school-hours to study, or more than forty minutes at a time to close application; and no recitation or blackboard exercise, which imposes the greatest exertion of the mind, should be longer than fifteen minutes. The education of the senses, and the best kinds of gymnastics for school, are considered quite at length.

There is one point upon which Dr. Bell lays great stress, and we are gratified that he does so; that is, the punishment of a refractory pupil by his detention from play, or keeping him in after school-hours. He says that teachers and others who favor the keeping-in system must be very superficial observers of children, not to have learned that to deprive a child of play is an exceedingly poignant punishment,—one that afflicts and grieves his mind not only, but frequently stirs up his worst passions. Besides, keeping-in is frequently coupled with an extra task, or 'till the lesson is got.' Surely, nothing could be better calculated to create a repugnance to study, and stimulate obstinacy. Moreover, it sometimes involves the loss of a meal, or, at least, a postponement of meal-time, to the derangement of digestion and injury of health. In every attitude of the case the system of keeping-in as a punishment is bad; worse, even than corporal punishment, and, like it, should never be practised except in extreme cases.

In the portion of the essay devoted to the school-house itself, the site first claims attention. In dealing with this subject, the essayist says that the ground air is liable to be impregnated with emanations from all decomposing material; and instances are by no means lacking to show that schools exposed to such dangers have frequently incurred severe epidemics of whooping-cough, measles, scarlet-fever, diphtheria, and typhoid-fever, and are constantly liable to pneumonia, catarrhal and diarrhoeal diseases. In speaking of the materials which should be selected to be used in building school-houses, Dr. Bell refers to the examination of various kinds of stone which was made with reference to the choice of building-stone for the British House of Parliament in 1839. It was then found that the absorption of water for one hundred volumes of rock was in the following proportions: in three specimens of siliceous limestones, 5.3, 8.5, and 10.9; three of nearly pure limestones from oolite, 18.0, 20.6, and 31.0. In all the experiments the air was removed by first placing the specimens in water under the vacuum of an air-pump. Brick, under the same process, will absorb from ten to thirty volumes of water. The ventilation, warming, and sewerage of school-houses are concisely and intelligently discussed.

In speaking of the sanitary surveillance which is so essential in every school-system, Dr. Bell's testimony is of great value. His experience as a member of the Board of Education in Brooklyn entitles him to speak *ex cathedra*. He says, that, constituted as our boards of education are, with few exceptions, though there may be some members who are physicians, it is impracticable to secure competent sanitary supervision under the direction of or subordinate to them. They are generally divided into committees with special charges,—on sites, construction, heating, ventilation, health, etc.; and on school-houses, with the special surveillance of particular schools, severally, to the different committees. All such committees are exceedingly jealous of their rights, and resist the interference of their fellows: hence even inquiries are commonly met

as if reflecting insinuations of shortcomings. It is manifest that no sanitary service under the direction of such a board can be efficient. Sanitary surveillance should therefore be exercised by the health department of every city, town, county, or district, as the case may be, with that special care which the nature of the service demands.

The essay, as we have already said, is one of great value, and we would recommend every teacher in the State to send to the secretary of the Medical Society, William Manlius Smith, M.D., for a copy.

**BASE-BALL PLAYERS.**—Dr. Leuf contributes an article to the *Medical and Surgical Reporter* on the injuries of base-ball players. The doctor is a player himself, and speaks from personal experience as well as from observation. He says that one of his fingers was injured by a ball five times in one week, and that all his fingers have been injured at least once. His treatment is to continue playing, and at every opportunity—either in the street, in the office, or upon the field—to firmly grasp the finger about the middle, and rub towards the tip. Under this treatment, the swelling, stiffness, and soreness diminish, and after some weeks are entirely gone. The most marked swelling of the hand, accompanied by great pain, can be best relieved by the application of water as hot as can be borne, the hand remaining in the water for an hour, the temperature being maintained during the whole time. Nothing will do so much harm to a player as to abstain altogether from playing because he has some trivial injury or sore muscles.

**DIPHTHERIA CARRIED BY THE COOK.**—Dr. Jacobi sends the following letter to the health board of New York: “Ann Donnelly is a cook. She was in the house of Lieutenant Reed of West Point. She went to New York to bury a child of hers, who died of diphtheria at the house of a Mrs. McKee, No. 327 West 43d Street, about May 20. About ten or twelve days ago she unpacked a trunk in Lieutenant Reed’s house, in the presence of his children. The boy is recovering from diphtheria: the girl, of five years, died day before yesterday. The cook has disappeared from the house,—trunk and all,—ready to unpack again somewhere else, and go on murdering. If that woman cannot be sent to the State prison for sowing death wherever she goes, can she not be hunted up and stopped from doing mischief?”

**TYPES OF BREATHING.**—Dr. Mays of Philadelphia has been investigating the reasons for the abdominal or diaphragmatic type of breathing in the male, and the costal type in the female. That there is a fundamental difference in the two sexes was observed by Boerhaave as long ago as 1744. Hutchinson seemed to think that it might be a peculiar reservation against the period of gestation, when the abdomen cannot allow of so free a descent of the diaphragm; and to-day this is regarded as the reason for the difference. It occurred to Dr. Mays that an observation on the respiratory movements of females of a wild race, who had never been subjected to the constriction produced by civilized dress, would assist in solving the problem. With this object in view, he obtained permission to investigate the chest movements of the Indian girls of the Lincoln Institution. The instrument which he employed was a pneumograph of his own device, modelled somewhat after that of Paul Bert. It consists of a pair of calipers with two long and two short arms. The long arms are applied to the chest, and the short arms extend beyond the pinion which binds the instrument together. Between the two short arms, and by means of two small pinions, an air-drum is adjusted in such a way that the slightest motion produces either a rarefaction or a condensation of the air in the drum, which being connected by a column of air with a similar drum carrying a registering-lever, the movements of the chest are accurately marked on a revolving cylinder. In order to produce a slight and uniform pressure on the walls of the chest, the two long arms are connected near their union by a thin piece of elastic rubber. By means of this apparatus Dr. Mays examined the movements of eighty-two chests, and in each case took an abdominal and a costal tracing. The girls were partly pure, and partly mixed with white blood, and their ages ranged between ten and twenty years. There were thirty-three full-blooded Indians. Seventy-five of the entire number showed a decided abdominal type of breathing; three, a costal type; and in three

both types were about even. Those who showed the costal type, or a divergence from the abdominal type, came from the more civilized tribes, like the Mohawks and Chippewas, and were either one-half or three-fourths white; while in no single instance did a full-blooded Indian girl possess this type of breathing. From these observations Dr. Mays concludes, that, so far as the Indian is concerned, the abdominal is the original type of respiration in both male and female, and that the costal type in the civilized female is developed through the constricting influence of dress around the abdomen. It is very evident that the costal type of respiration in the civilized female is not due to the influence of gestation, as was believed by Boerhaave, Haller, and Hutchinson; for the influence of this process obtains as much among the uncivilized as it does among the civilized people. Dr. Mays directs attention to one result of his investigations which is well worthy of consideration. What is the influence of such abdominal constriction, as is practised by our civilized female, on the respiratory functions? he asks. Is it detrimental to health, or is it not? If, as is shown by these experiments, interference with the motion of the diaphragm produces a compensatory breathing in the costal portion of the chest, does not this tend to antagonize or counteract the sluggish respiratory movement of the lung apices? Is there any intimate relation between this induction and the fact that proportionally, and as a rule not without some exceptions, a less number of females than males die of pulmonary consumption?

#### MENTAL SCIENCE.

##### Good and Bad Temper.

MR. FRANCIS GALTON, whose researches on the hereditary and other characteristics of mental faculty have introduced science into subjects usually given over to opinion, publishes, in the *Fortnightly Review* for July, an analysis of statistics on good and bad temper. Some time ago Mr. Galton drew up an extensive series of questions concerning the physical and mental traits of families, and offered prizes for the most complete set of answers embracing the record of several generations. Fully recognizing the sources of inaccuracy inherent in such reports, Mr. Galton has ingeniously tested their reliability, and is extremely careful not to treat them in a more accurate manner than they justify. The statistics, embracing descriptions of the tempers of 1,981 persons, are sufficiently extensive to warrant the general conclusions which they suggest.

‘Temper’ is a convenient word wherewith to describe that general complex of emotional traits which serves in common life to distinguish personal characteristics that lead to sociability from those that do not. Every one knows what it means, and, consciously or unconsciously, guides his social intercourse accordingly. It is this that is most tangibly referred to as the source of family feuds and social quarrels. Its variability and fundamental importance make it difficult to describe. It is curious to note that Mr. Galton has only fifteen epithets for good temper, and forty-six for bad.

These are again grouped into five main classes,—mild, docile, fretful, violent, masterful; the three former predominating in women, the two latter in men. The number of persons, however, in the two groups of good and bad temper, is about equal; one set of data making it 48 good to 52 bad, and another 47 to 53. There is likewise little difference between the sexes; but what there is, is in favor of the gentler sex, there being 45 per cent of bad tempers amongst them, and 55 per cent amongst men. Altogether 36 per cent were mild in temper, 15 per cent docile, 29 per cent fretful, 12 per cent violent, and 8 per cent masterful.

It is curious to note how well the number of persons recorded as good, bad, or neutral in temper coincides with what theoretical considerations demand. Of 1,361 persons, 321 are described as good, 342 as bad, and 705 as neutral (most of the last not being described at all); that is, these observers unconsciously divide persons into four equal classes,—good-tempered, bad-tempered, not decidedly either but with more of a tendency to good, and similarly towards the bad. This shows that the line of average temper was placed where it belongs, with equal deviations in either direction. Another mark of reliability is to be found in the fact that near relatives are spoken of as bad-tempered quite as unreservedly as more distant ones.