

Analyses show an extremely rapid increase of the solid contents of the water between June, 1888, and February, 1889, as compared with the effect produced during the previous seven and a half years. The latter was about two and a half times or 150 per cent on the whole, or an average of 13 per cent a year; while in the eight months preceding the last examination the increase was nearly 45 per cent. It should be noted that these eight months were remarkable for very great evaporation elsewhere on the coast, also, and that they formed the end of three years of rather deficient rainfall in the State. The more abundant moisture of the season just passed may have stopped or perhaps even reversed the process.

It is hoped that all persons who may, from their own observation, be able to throw light upon the history of the recession of these lakes, will communicate the facts, so as to place them on record.

THE CAMERA ABROAD.

IN a recent article in *The Swiss Cross*, when speaking of photographing in foreign countries, I advised every one to become familiar, to some extent at least, with the French language, and particularly with the technical terms used in photography; the different portions of the apparatus; the chemicals; short phrases to be used in the custom-house, to the police, to hotel servants, etc.

I need hardly say that those who intend to visit the German fatherland ought to pursue the same course with the German language. As a general rule, the traveller will find that English is spoken tolerably well almost everywhere; but it is when he goes out, and rambles about in the country or in the older and more picturesque portions of cities and towns, that he comes in contact with a class of persons who rarely speak any other tongue than their own. The mere presence of a stranger in such places will attract notice. Any thing like sketching, drawing, or photographing will be sure to draw a crowd of idlers, who will sometimes render work in these places very unpleasant, or even at times quite impracticable. A little knowledge of the native tongue is invaluable under such circumstances.

I have frequently been asked the question whether the lower orders of the people in different European countries acted differently toward the out-door photographer. On the whole, I think I can say that there is less annoyance in Germany than in most other countries. I must, however, make this reservation: that if a public school is dismissed while the photographer is anywhere near, there is sure to be trouble. The children crowd around the camera, and spoil every thing. On one occasion I was fairly driven from the field from this cause; for, even knowing the language, I found it impossible to keep them from encroaching. There is no ill nature, however, in this sort of interference with photographic work; but in some parts of the Netherlands I have had very disagreeable encounters with drunken roughs, who persisted in standing directly in front of the instrument, even when they saw plainly that they were hindering the work.

Supposing that the amateur travels for Germany on one of the comfortable Bremen or Hamburg steamers from New York: he will find himself pretty well in the fatherland from the moment when he sets foot on the vessel. The officers and crew are German to a man. The food is German, and so are the customs observed on the vessel. A very pretty one is the music which is generally furnished by the stewards during the dinner-hour every day, and early on Sunday mornings. At these times some piece of a solemn or religious character is always selected, and the effect made upon the mind by being thus awakened on a steamer in mid-ocean by religious music is not soon forgotten. The music at dinner, however, even on Sundays, is any thing but solemn in character; and the choruses to the well-known German convivial songs are joined in by all the passengers who can sing, and roared out right lustily, to the great satisfaction of those who, not being able to sing, contribute their part in screams of laughter and ringing applause. The good cheer at the table does not suffer neglect during all this babel of sounds, and, let me say in parenthesis, it is of unsurpassed quality. Americans are too apt to associate ideas of German cookery with sauerkraut and beer; but on these vessels such ar-

ticles are rather conspicuous by absence, and the table is furnished with every luxury that a pampered appetite could demand.

If the photographic apparatus is of small and convenient size, there will be numerous scenes and incidents on board a large ocean-steamer worthy of being recorded. The same apparatus could hardly be expected to answer for groups on the deck and for effective views of vessels passing. While steaming in the harbors of cities like New York, Hamburg, or Bremerhaven, capital instantaneous shots may be made at the water-craft of all kinds, but a lens of long enough focus to reach them nicely would probably be found unmanageable for groups of people on deck. If photography be attempted at sea while the vessel is rolling, take care to keep the camera level with the horizon, no matter what position the ship may assume. This, of course, is easier to say than to do; but, if neglected entirely, the pictures will make the level surface of the ocean appear like a steeply inclined plane. Remember that the forward part of the vessel is the most desirable standpoint for the camera, because the jarring motion of the screw is less felt here than in the after part. If the instantaneous shutter was a rather slow-working one, the outlines of the picture might be doubled by the vibration of the screw.

Those who are fond of making studies of clouds will here have an excellent opportunity. As a general rule, the best time to work is in the afternoon; and in selecting a position for the camera, take care that none of the ship's braces or shrouds cut across the field of the lens. This may happen at times when work has to be attempted in a hurry; as, for instance, when the pilot is taken on, when the tug comes for the mail, etc.

Great care must be taken not to expose the outfit, and particularly the sensitive plates or paper, to the damp sea-air for a longer time than is absolutely necessary. The sliding doors in the plate-holders should be constantly looked to, and special examinations made by red light at night to see that the spring cut-off in the slot of the holder closes properly when the door is withdrawn. A little time and trouble bestowed in this manner will be well rewarded by clean results, free from light-streaks and fog; for it will often happen that the cut-off swells just enough to leave a crack open when the door is pulled out, and the consequence is that every exposure is "light-struck." It is a good plan to take a sheet of fine sandpaper, a small screw-driver, and a sharp pocket-knife on all photographic excursions, so as to be prepared for accidents of the kind. The practice of throwing the focusing-cloth over the holder when the door is drawn out is a great protection to the film, and should always be done.

The port of Bremerhaven, where the amateur will probably land in Germany, offers little of interest; but just the reverse is true of Bremen, seventeen miles away. Of this I will speak in my next.

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PREPARATION AND PROPERTIES OF MANGANESE.¹

THE properties of manganese, like those of iron, appear to differ according to the method used in the reduction of the metal. When obtained from the oxide by heating with carbon, most authorities agree in the statement that the metal oxidizes so readily in the air that it can be preserved only under "rock oil" or in well-sealed vessels. In water it is said to "oxidize rapidly, with evolution of hydrogen, and crumbles into a dark gray powder." Cast manganese containing eight per cent of iron is said to be unalterable in the air.

In the year 1869, some manganese prepared after the process of Brunner (the reduction of the chloride mixed with fluorspar, by means of sodium) was found to have as little tendency to oxidation as iron. Repeating recently this process, pure chloride of manganese was fused in a clay crucible, and poured on a stone slab. When cold, it was pulverized, and mixed with an equal weight of powdered fluorspar. This mixture, divided into portions of one ounce, was introduced into a French clay crucible, previously heated to redness. Eighty grains of sodium, cut into small pieces and freed from naphtha, being added to each portion, the crucible was covered, and re-action allowed to take place before adding an-

¹ Paper read at the meeting of the chemical section of the Franklin Institute, Philadelphia, May 21, by Charles Bullock.

other charge. After six ounces of the mixture had been added, the contents of the crucible was covered with fused chloride of sodium in powder, the cover replaced, and the heat carried to quiet fusion. After the flux became entirely fluid, the heat was continued for ten minutes. The crucible was then removed from the fire, and, after cooling, the metal was found as a button at the bottom.

Three crucibles, of the capacity of eight fluid ounces each, were used at a time in a furnace without artificial blast. Care is necessary not to urge the heat too high, otherwise the crucibles will not resist the action of the fluorspar flux. The French-clay crucibles (Beaufay) were used, on account of their greater freedom from iron and silica; they also resist the flux better than the Hessian, black lead, or iron crucibles. The yield of manganese, under favorable circumstances, was about twenty per cent of the chloride used.

Reduction was also tried by using fused chloride of sodium without fluorspar. The yield of metal was much less, and differing in some of its properties from that obtained with the use of fluorspar. Manganate of soda was formed when sodium chloride alone was used as a flux. Manganese thus obtained is very brittle, with a steel-white fracture so hard that a file will scarcely touch it. The edges of the fractures scratch, and almost cut, glass. The metal retains the brightness of a fractured surface after prolonged exposure to the air, and appears not more disposed to oxidation than iron. It is entirely passive to magnetic attraction.

The specific gravity of the metal obtained when fluorspar was used was 7.072. When remelted under fused sodium chloride, the specific gravity rose to 7.153. The metal obtained without the use of fluorspar was less brittle, and had a different fracture. Its specific gravity was 7.231. Authorities differ regarding the specific gravity of manganese, ranging it from 6.85 to 8.013.

An examination of the metal obtained, using fluorspar as a flux, showed the absence of iron and the presence of calcium, demonstrating the reduction of some of the latter metal from the spar. This may account in a measure for the increased specific gravity on remelting under sodium chloride, as also the greater specific gravity of the metal when the spar was not used. As calcium has the specific gravity of 1.57, a small amount alloyed with the manganese would sensibly affect its gravity.

ETHNOLOGY.

Marriage Ceremonies of the Bilqula.

MR. PH. JACOBSEN, in a letter to his well-known brother, Capt. A. Jacobsen, gives the following description of the marriage ceremonies of the Bilqula of British Columbia. An Indian who intends to marry, calls upon his intended wife's parents, and arranges with them how much he is to pay for permission to marry the girl. Among people of high descent this is done by messengers, sometimes as many as twenty being sent to call on the girl's father. They are sent by the man's parents before the young man is of age. In many instances both man and girl are not more than eight or nine years

The messengers go in their boats to the girl's house, and marry on their negotiations without going ashore, where the relatives of the girl are standing. The messengers of the young man's parents praise his excellence and noble descent; the great exploits of his father, grandfather, and ancestors; their wars, victories, and hunting expeditions; their liberality at festivals; etc. Then the girl's relatives praise the girl and her ancestors, and thus the negotiations are carried on. Finally a number of blankets are thrown ashore by the messengers; and the girl's relatives protest, and maintain that the number is not sufficient to pay for the permission to marry the girl. In order to obtain their consent, new blankets are thrown ashore one by one, the messengers continually maintaining that the price paid is too great. Generally from twenty to fifty blankets, each of the value of about half a dollar, are paid.

After this the boy and the girl are considered engaged. When they come to be grown up, the young man has to serve a year to his father-in-law. He must fell trees, fetch water, fish, and hunt for the latter. During this time he is called Kos, which means

"one who woos." After a year has elapsed, the marriage is celebrated. At this time great festivals are celebrated. Seven or eight men perform a dance. They wear dancing aprons and leggings, trimmed with puffin-beaks, hoofs of deers, copper plates, and bells. If the groom should be a wealthy man, who has presented to his wife many small copper plates, such as are used as presents to a bride, these are carried by the dancers. The singing-master, who beats the drum, starts a song in which the dancers join. The song used at the marriage festival is sung in unison, while in all other dances each dancer has his own tune and song. The first dancer wears a ring made of cedar-bark. His hair is strewn with eagle-down, which flies about when he moves, and forms a cloud around his head. The groom presents the first dancer with a piece of calico, which the latter tears to pieces, which he throws down in front of each house of the village, crying, "Hoip!" in order to drive away evil spirits. These pieces of calico which he throws down in front of the houses have a lucky meaning, and at the same time express the idea that the groom, when he comes to be a wealthy man, will not forget the inhabitants of any house when giving a festival. The dancers swing their bodies and arms, stamp their feet, and show the copper plates to the lookers-on. Then the bride's father brings a great number of blankets, generally double the number of those he had received from the groom, and gives them to his daughter. The bride orders a few blankets to be spread before the groom. She sits down, and he puts his hand upon her head. Then the groom is given for each of the parts of his body one or more blankets. Finally he is given a new blanket. After the bride's father has given a blanket to each dancer and to the drummer, the villagers are invited to a great feast. At this time groom and bride eat for the first time together.

HEALTH MATTERS.

American Public Health Association.

THE preliminary circular relating to the next meeting of this association has just been issued. The meeting will be held at Brooklyn, N.Y., Oct. 22-25, 1889.

The executive committee have selected the following topics for consideration at said meeting:—1. The causes and prevention of infant mortality. 2. Railway sanitation: (a) Heating and ventilation of railway passenger-coaches; (b) Water-supply, water-closets, etc.; (c) Carrying passengers infected with communicable diseases. 3. Steamship sanitation. 4. Methods of scientific cooking. 5. Yellow-fever: (a) The unprotected avenues through which yellow-fever is liable to be brought into the United States; (b) The sanitary requirements necessary to render a town or city proof against an epidemic of yellow-fever; (c) The course to be taken by local health authorities upon the outbreak of yellow-fever. 6. The prevention and restriction of tuberculosis in man. 7. Methods of prevention of diphtheria, with results of such methods. 8. How far should health authorities be permitted to apply known preventive measures for the control of diphtheria. 9. Compulsory vaccination. 10. Sanitation of asylums, prisons, jails, and other eleemosynary institutions.

Papers upon miscellaneous sanitary subjects not included in the above list will be received by the executive committee, subject to the requirements of the By-Laws. Preference will be given, however, to papers upon the subjects selected by the committee in making up the daily programme of the meeting.

It is confidently expected that the Brooklyn meeting will be the largest and most important ever held by the association. The local committee of arrangements have already organized, and have the preliminary local work well under way. No efforts will be spared to make the meeting a grand success, and every arrangement necessary to the comfort of those attending will be made in ample season.

The growth and work of this association constitute a monument to American hygiene. It was organized in 1872, and has grown to be the largest association of its kind in the world, and embraces in territorial area the United States, the Dominion of Canada, and the Provinces. It has published fourteen large volumes on health subjects, one volume on disinfectants (which is the most complete