

between returns from twenty-eight ships containing 116 recent observations, with the data in the charts of the Atlantic sea-surface temperature (lately published by the Office) referring to the area between latitudes 45° and 55° N., and longitudes 0° to 35° W., i.e., between the latitudes of the North of Ireland and Bordeaux, and extending half-way across the Atlantic; and it appears from this comparison that during last summer the ocean temperature in the course of the Gulf Stream has been abnormally high. In June the whole area was about 3° Fahr. above the mean; in July the half of the area lying nearest to the British Isles was about $1\frac{1}{2}^{\circ}$, and in August about 1° higher than the mean.

EDUCATION DEPARTMENT, ONTARIO.

JULY EXAMINATIONS, 1885.

Second Class Teachers.

CHEMISTRY.

Examiner—John Seath, B.A.

1. Describe experiments to illustrate the general properties of acids, bases and salts. Classify, if possible, the following under these heads, assigning your reason in each case:— H_2S , KHO , CO_2 , CaCO_3 , H_2CO_3 , CaO . [12.]

2. Describe and explain fully one process by which you would disinfect a badly smelling drain. [6.]

3. State in each case the simplest mode of determining when a receiver is full, in the preparation of ammonia, chlorine, carbon dioxide, and sulphur dioxide. How would you transfer each of these gases from one receiver to another? [8.]

4. Describe experiments to show the nature and properties of sulphur. How much air is needed to burn completely 4 oz. of sulphur? [12.]

5. Fully describe and explain the following experiments:—

(a) Some strong sulphuric acid is poured on a piece of zinc, and after the chemical action has ceased, water is carefully added. [4.]

(b) Carbon dioxide is passed for some time through lime-water. A portion of the clear solution thus obtained is boiled; another portion or it is exposed for an hour or so to the air; and, to another portion, lime-water is added. [9.]

(c) Some distilled water is shaken up in each of the full receivers mentioned in 3 above. [8.]

(d) Some chlorine gas is exposed to the air in an open receiver. [5.]

(e) One volume of hydrogen is mixed with one volume and a half of chlorine, and the mixture exposed to the action of diffused sunlight. [3.]

6. You are given a powder known to be carbonate of ammonia, phosphate of soda, nitrate of lead, or chlorate of potash. Describe the simplest mode of determining which it is. [8.]

THE CLASS-ROOM.

DAVID BOYLE, Editor, Toronto.

NUMBER AND ARITHMETIC.—II.

FROM FOUR TO FIVE.—ONE number should be thoroughly taught before another is introduced. Teach four thoroughly, before attempting to teach five. Introduce the new number as a refreshing subject for discovery and learning. The power and skill with which pupils take up the new number is the best possible test of the way the preceeding numbers have been learned. They will bring to the new work all the knowledge, power and eagerness to discover what they have already acquired. We see with all we have seen; we think with all we have thought; and we do with all we have done.

ONE is united with four and the name given, five. Find all the fives you can. Draw a figure with five straight lines. Find a block with five sides or faces. Fix five as a whole in your pupils' minds and then begin the discovery of all facts in five. It may be right to ask for the facts in five without the presence of objects. I should try it, and if the result be satisfactory, continue it. At