

oxygen is the bleacher : in the latter, hydrogen.

The goods to be bleached by chlorine must be wet in order that the gas, by combining with the H of the water, may liberate O, to the unusual activity of which, in its nascent condition, the bleaching is due.

7. Name the essential constituents of the atmosphere, and give, as far as you can, their particular uses in the economy of nature.

7. The essential constituents of atmospheric air may be said to be oxygen, nitrogen, carbon dioxide, aqueous vapour and ammonia. Oxygen is the great supporter of combustion ; without it animal life as at

present constituted would be impossible. The principal use of the nitrogen appears to be to dilute the oxygen. From the carbon dioxide in the air, plants obtain the carbon necessary for their growth ; and from the ammonia they obtain nitrogen.

The aqueous vapour plays an important part ; we experience discomfort when there is either a deficiency or an excess of it. It may serve also as a distributor of heat, the heat rendered latent during the excessive production of vapour in the tropics becoming sensible when this vapour is again condensed elsewhere. To this condensation is also, of course, due the supply of fresh water all over the globe.

SCHOOL WORK.

DAVID BOYLE, ELORA, EDITOR.

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NORMAL SCHOOLS.

ARITHMETIC—METHODS.

NOTE.—This paper will be valued at 120 per cent.

1. Shew how you would teach the numbers from 5 to 10, using "number-pictures." How would you proceed when the combinations from 1 to 20 have been mastered ?

2. Shew how you would explain the reason of the rule for placing the partial products in long multiplication.

3. Give a lesson on finding the G.C.M. of numbers that can be factored.

4. Shew how to teach, by analysis, the "cases" of "Profit and Loss."

5. Give a lesson

(1) Developing the idea of a fraction.

(2) On the notation of fractions (vulgar).

6. You find that pupils misapprehend the "rule for finding the area of a rectangle"—

regarding the multiplicand, or multiplier, or both, as so many units *long* or *wide*. Indicate the teaching by which you would convince them of the error.

PHYSICS—METHODS.

1. Define force. What is meant by the *conservation* and what by the *correlation* of forces ?

2. Draw a diagram of the common pump, and give a lesson on this machine.

3. Describe fully how you would teach that heat is a *mode of motion*.

4. Your school-room is heated by a common stove. Show how you would ventilate it at the least possible cost, explaining fully the scientific principles involved.

5. Explain the *rationale* of the following :—

(1) Water placed on a stove in a room.

(2) A wet towel wrapped round a vessel containing water keeps it cool.

(3) If you sit near an open window you will probably catch cold.

ALGEBRA—METHODS.

1. Shew how you would impart clear ideas of a co-efficient. What arithmetical example