

on his knees with one blow, and without moving, is a feat which cannot be accomplished by anybody short of a very first-rate man and an unerring aim.

44. In stooping down to drink, the weight of the cart forced the mare's head first into the water, and before she could be relieved was drowned.

45. I think it may assist the reader by placing these before him in their chronological order.

46. If there is anyone embarrassed, it will not be me, and it will not be she.

47. Would it not be better to keep some memorandum of these sort of engagements?

48. One fine afternoon everybody was on deck, amusing themselves as they could.

49. I spoke it in the tone of one who is ashamed of their own absurdity.

50. My object in this letter is to express a hope that the members of this University may, each as far as lies in his power, exert their influence to obtain its removal from such a position.

SCIENCE.

GEORGE DICKSON, M.A., and R. B. HARR, Ph.D.,
Editors.

CHEMICAL PROBLEMS.

For First Class Candidates.

By A. McGill, Ottawa.

1. When barometer is 760 mm., find pres-

sure of air in grams per sq. cm. (s. g. mercury = 13.596.)

2. Barometer = 30 inches. Find pressure per sq. in. in lbs. avoird. (1 cub. ft. water = 62.32 lbs.)

3. 76 c.c. dry air at 20° C., and 586 mm. barometric being mixed with dry hydrogen, the total volume at 15° C. and 570 mm. is found to be 115.2 c.c. On explosion the volume becomes 101½ c.c., at 91° C., and 1001 mm. mercury. Free hydrogen is found to be present. Tension of water vapour at 91° C. is 530 mm. mercury. Find p. c. composition of air by volume.

4. The relative densities of oxygen and nitrogen being 16 and 14, calculate p. c. composition of air by weight from data above.

5. 20 litres oxygen measured at 14° C. and 700 mm. mercury, is mixed with 15 liters nitrogen, measured at 20° C. and 800 mm. Calculate the p. c. composition of the mixture by weight.

6. Taking coefficient of solubility at 0° C., and 760 mm. of oxygen in water as 0.04114, and that of nitrogen as 0.02035, calculate the volume composition of the gas dissolved by water from above mixture at 0° C., and 760 mm. barometer.

7. A vessel of capacity 2 litres, and capable of sustaining a pressure of 100 kilog. per sq. cm., has pumped into it 27.3 grams nitrogen at 175° C. To what temperature must the gas be raised to burst the vessel?

OUR young people should know more about the simple things around them than most of them do—especially those condemned to the imprisonment of town or city life; the crops our fathers raise; the trees of the orchard, the park and the forest; the weeds and the flowers of the lane and the garden—dame

Nature's children and step-children as the old Greek story classes them; the birds that build their nests on the ground, under the eaves, and up among the branches, and the songs they sing and when they sing them, and how they are fed, as they do not sow, nor reap, nor gather into barns.