$3

| $5 – 2 | . | . | . | . | 2 + 1 |
| $5 — 2 | . | . | . | . | $2\frac{1}{3} + \frac{1}{2}$ |

Taking smallest gangs from each equation gives

1 man at $5 to 1 woman at $1, gang of 2,
5 men   do 4 boys $½ do 9.

In what ways can 55 be made of twos and nines ?

1°   5 twos + 5 nines
2° 14 " + 3 "
3° 23 " + 1 "

∴ 1 ° gives 30 men, 5 women, 20 boys ;
2° " 29 " 14 " 12 "
3° " 28 " 23 " 4 "

103. A drover paid the sum of £100 for 100 head, consisting of oxen, pigs and geese, he was to pay for each ox £4, for each sheep £1, each goose 1s, how many of each did he buy ?

R. M. WHITE, Northport.

£100 for 100 head gives an average of 20 shillings each.

20 s.

80—60 . . . . . 19 + 1

20.

∴ 19 at 80s. 60 at 1s. and 21 at 20s.

We purpose taking up the subject of Alligation as soon as our official duties allow us time.

101. A uniformly flat triangular stone whose sides are 25 inches, 30 inches, and 40 inches, is carried by three men, each supporting a corner. Compare the weights supported by the men.

H. A. JAMESON, Glenmorris.

The stone being ' uniformly flat ' each will carry one-third of its weight provided it be held horizontal. The centre of gravity of a triangle coincides with the centre of gravity of three equal heavy particles at the angular points of the triangle. (See Todhunter's Mechanics for Beginners § 134, or any good elementary text-book on Statics.)

102. The slant side of a roof is 18ft. and its edge is 37ft. from the ground. A boy starts his ball down the roof with a velocity which would just carry it from the side to the edge in one second of time. The ball is caught by a second boy whose hand is 3ft. from the ground. How far is the second boy from the side of the house, the roof making an angle of 30° with a horizontal line. (Answer must not contain surds.)

DITTO,

With regard to the roof, let A be the angle of elevation, s the slant width, v the initial velocity down, V the velocity on leaving, f the gravity acceleration along, and t the time on. Let T be the time of falling from the eaves, h their height above the second boy's hand, and d his distance from the side of the house.

$f = g \sin A$;
$vt = s — \frac{1}{2}ft^2$;
$V = v + ft$;
$\frac{1}{2}gT^2 + VT \sin. A = h$;
$d = VT \cos. A,$

Substituting the given values

$f = 16$; $v = 18 — 8 = 10$;
$V = 10 + 16 = 26$
$16 T^2 + 13T = 34$ or $T = 1.10704$
$d = 1.10704 \times 13 \sqrt{3} = 24.9268.$

BOOK NOTES,

Exercises in Algebra to Simple Equations inclusive. With an introductory lesson on Negative Numbers. By W. A. Whitmore. London : Philip and Son. An excellent little work. Algebra grew out of arithmetic and was long in adopting letter-symbols. Why not in our teaching follow the track of growth ?

On Sound. By J. Tyndall, London : Longmans & Co. $3. 75. This edition, the third, contains valuable additions on the refraction of sound and on acoustic reversibility. No teacher who would study Natural Philsosophy should be without Tyndall's works.

On the Sensations of Tone. by H. T. F. Helmholtz. Translated by A. J. Ellis, London : Longmans & Co. $10.80. To the powers of exposition of a Tyndall, Helmholtz adds the mathematical ability of a W. Thomson. The work is too well known in the original for its translation by such a man as A. J. Ellis, to need recommending.

Handbook of the English Language. By R. G. Latham. Ninth Edition, London : Longmans & Co. $1.80. This edition of the pioneer of our new style of grammars proves its author has not stood still during the progress he so much helped to initiate.

Principles of Greek Etymology. By George Curtius. Translated by A. S. Wilkins and E. B. England, Vol. I. London : Murray, $4.50. The German original of this work is well known. The translation is worthy of that original.

General History of Rome. By the Very Rev. C. Merivale, London : Longmans & Co., $1.25. It is enough to say the work is by the author of " History of the Romans under the Empire."

Standford's Elementary Atlases. I. Physical Atlas, (sixth edition); II. Outline Atlas; III. Projection Atlas; IV, Blank sheets for Maps. By Rev. J. P. Faunthorpe, London : Ed. Stanford. An admirable apparatus for teaching map-drawing and at the same time of giving a thorough knowledge of physical geography so far as it can be