

of quinine; morphine and the opium alkaloids, and strychnine and brucine, occupy the next places of importance, whilst the remaining alkaloids are very briefly discussed. It is essentially a compilation, and, like all compilations, has a distinct value. In this case the value is somewhat adversely affected by the scanty treatment that some of the alkaloids have received. Thus the separation of emetine from cephaeline is simply mentioned, although Paul and Cownley showed long ago how it could be effected, and Farr and Wright have published a method for the accurate determination of colchicine, to which no reference is made; indeed, the results obtained by English workers in this field have been sadly neglected. The utility of the work would be much enhanced by a more thorough examination of the literature.

*Manual of Wireless Telegraphy and Telephony.*

By A. F. Collins. Third edition. Pp. xv+300. (New York: John Wiley and Sons; London: Chapman and Hall, 1913.) Price 6s. 6d. net.

THIS edition differs from the first, which was reviewed in the issue of NATURE for February 14, 1907 (vol. lxxv., p. 366), in several respects. The improvements in apparatus, and the advances made in wireless telegraphy in other directions, have led Mr. Collins to extend his treatment of the apparatus of a commercial station, and to describe the transmitting and the receiving instruments in separate chapters. The suggestions to operators relating to the management of stations are more exhaustive, and other useful additions have been made.

LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. No notice is taken of anonymous communications.]

Artificial Hiss.

CAN any of your readers tell me how to make an artificial hiss? I have heard something like one from steam blowing off at a safety-valve. There the pressure was very high, but in the mouth a hiss is made with a moderate pressure behind. The problem must have been faced by inventors of speaking machines, but I do not know with what success. The best that I have been able to do myself is by blowing through a rubber tube nipped at about half an inch from the end with a screw clamp, but the sound is perhaps more like an *f* than an *s*.

There is reason to think that the ear, at any rate of elderly people, tires rapidly to a maintained hiss. The pitch is of the order of 10,000 per second.

RAYLEIGH.

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An Application of Mathematics to Law.

I WOULD not have troubled you with further correspondence on this subject but for the fact that Mr. Potts's letter (April 24, p. 187) illustrates in a remarkable way the value of a knowledge of the fundamental principles of mathematics when possessed by

persons occupied in work often apparently of a very unmathematical nature.

Mr. Cripps (May 15, p. 270) appears to belong to the unfortunately too prevalent class of individual who mistakes algebra for mathematics, and he bases his objection entirely on the purely algebraic equation  $I=M+i$ . He completely overlooks the fact that Mr. Potts's method is based entirely on the great and powerful conception of *functionality*. But if I understand Mr. Potts correctly, the problem in which he is an expert consists in determining the forms and characteristics of certain functions, and not in the mere numerical solution of equations. G. H. BRYAN.

Overheated Water.

THE experiment of Dufour, in which drops of water were suspended in a mixture of linseed oil and oil of cloves, and heated to 120° C. without boiling, is seldom repeated for class demonstration, presumably owing to the difficulty of preparing a mixture of the oils exactly equal in density to water at the temperature named. The phenomenon may be shown with ease and certainty, however, by employing a mixture of four volumes of ethyl benzoate and one volume of aniline instead of the mixture of oils, the procedure being as follows:—Place 80 c.c. of ethyl benzoate and 20 c.c. of aniline in a beaker, and surround by a bath of glycerine or strong sulphuric acid. Heat the bath until the temperature of the mixture is 125° C., and then add 2 to 5 c.c. of freshly boiled water by means of a pipette. The water will sink at first, and rest on the bottom of the beaker; but on attaining the temperature of the mixed liquids it will break up with some violence into spheres of various sizes, which remain floating in the liquid so long as the equi-density temperature of 125° C. is maintained. It is advisable to place a cover over the beaker to prevent the fuming of the mixture.

For lantern projection, a copper vessel, square in section, and having two opposite sides of patent plate-glass, will be found satisfactory, glycerine being used to surround the beaker and the temperature raised gradually.

CHAS. R. DARLING.

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"Goal, and the Prevention of Explosions and Fires in Mines."

I MUST point out that some of the statements in your review of the above book in NATURE of April 24 are inaccurate.

"Great explosions do not, as Dr. Harger imagines, travel either exclusively or generally against the direction of the ventilating currents." What I say in the book (p. 78) which your reviewer is presumably criticising is this:—"All big dust explosions are similar to the one at Altofts. Ignition is followed by quiet combustion for 50-100 yards, then the wave of progressive combustion gathers speed, and finally attains a velocity approaching that of detonation, and races through the dust and air at a speed of 50-100 miles per minute. Such dust explosions always proceed *against* the current of air; sometimes they go the other way also, but seldom reach the working faces. As a rule the branch of an ignition which travels with the air current fails to develop violence," &c.

Every dust explosion in a mine on record has travelled against the air current, and the *reason* for this is clearly put in my paper on gob fires and the prevention of gob fires in mines, which your reviewer quotes, and also on pp. 98-100 in the book.

Your reviewer quotes Proc. Roy. Soc., vol. xxviii.,