under the conditions employed by Bills, Honeywell and MacNair is of the order of 0.01 per cent.

The above suggestion in no way invalidates these authors' results regarding the slight activatability of their purified cholesterol, but simply dissociates the phenomenon from the absorption bands at 315 and 304 μ , for cholesterolene is not rendered active by irradiation.

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The Nebulium Spectrum in New Stars.

IN NATURE of Jan. 28, p. 136, Mr. S. R. Pike makes an objection to the density which I have found, by the 'expanding shell' theory for novæ, to be necessary for the production of the nebulium spectrum. Mr. Pike applies the formulæ of the theory of thermal ionisation and finds that it is inconsistent to have the spectra of hydrogen and nebulium present at the determined density and both existing under the same temperature. For coexistence of these substances, defined as 0.1 per cent. H atoms and 0.1 per cent. O^{++} atoms, he finds that a density of about 10^{-7} gm./c.c. is necessary, as against the density of about 10^{-17} gm./c.c. given by me.

I believe that the entire discrepancy is due to the inapplicability of the theory of thermal ionisation. This theory as developed assumes a condition of thermal equilibrium, and it does not seem possible that equilibrium would have been reached in a few days after the outburst of a nova. Also, one might expect that photoelectric ionisation would be an important factor, especially in considering gases of very low density near a hot star. Furthermore, Mr. Pike's arguments might be extended to the nebulae as well as the nova shell, in which case one would expect densities of the same order of magnitude, about 10^{-7} gm./c.c. Such a density would be comparable with the mean density of the giant stars, and would indicate that the masses of the nebulae are enormously greater than has been generally accepted.

It seems to me that a method for studying the coexistence of spectra in novæ would be similar to that followed by Milne (*Mon. Not. Roy. Ast. Soc.*, **84**, 354; 1924) in his study of the life of a Ca^+ atom, and combining with it some additional suggestions given by Eddington (*Mon. Not. Roy. Ast. Soc.*, **88**, 134; Dec. 1927), where he shows that the dilution of the exciting radiation may account for the 'forbidden lines' of an atom being as strong as its ordinary lines. The problem is very difficult, as one knows nothing of the extreme ultra-violet radiation of novæ.

I should like to take this opportunity to correct a statement in my communication in NATURE of Jan. 7, p. 12. Referring to the coefficients of ρ_0^2 in the densities of the nova shells, it was stated that the constancy indicates that the novæ originate from stars of similar physical conditions. That statement can apply only to the radius of the star and the density of its atmosphere.

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Science Teaching in Schools.

IN NATURE of Feb. 25 appears a stimulating article by H. E. A. on "The Range of the Scientific Faculty," with most of which all interested in the pursuit of science will agree. In directing attention to the absence of scientific appreciation on the part of the literary man, a view so ably propounded by Sir Richard Gregory in his presidential address to the

Science Masters' Association in January last, the author is performing a public service. Unfortunately, it is doubtful if NATURE, despite its literary charm, will find its way into the temples of those deficient in 'factor X.'

What, however, are we to say of H. E. A.'s indictment of the schools in the latter part of his article? He writes . . . "The teaching of science is a failure, because it is parrot work . . . ; because it is so far beyond the common intelligence and the teacher's." Again, . . . "No attempt is made in the schools to teach the simplest elements of scientific method. . . ."

Surely H. E. A. cannot mean these statements to be taken seriously. If he does, we are entitled to ask where he has been hiding during the last twenty years. Has he fallen asleep like Rip van Winkle and just wakened up thinking things are still as when he commenced his slumbers?—and meanwhile the precious leaven of Armstrong's heuristic method has been at work with far-reaching effects on science teaching in the schools. Still more important, has he ever tried to teach in a modern school, and has he visited several of these much maligned institutions and seen the science masters at their work?

The brilliant young researchers at the National Physical Laboratory and kindred places, and those making good in the field of industry and in the fight against disease, drawn as they are from all types of secondary schools, are in themselves a tribute to the work of the science masters, who have been responsible for introducing them to the method of science.

The chief canon of scientific method is to make generalisations only when supported by overwhelming evidence.

Is it not as necessary for H. E. A. to be scientific in the full sense of the word when passing judgment on a section of the community as in expressing opinions regarding the effect of 'hydrone' in chemical combination?

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St. Albans, Mar. 3.

SEVERAL recent leading articles in NATURE have criticised the scope and character of science teaching in schools, and with much justification. In a leader in the issue of Feb. 25, two statements are made by H. E. A., namely: that

(1) "the schools say they are in the hands of the universities, whilst these retaliate that they are subject to the schools."

(2) "The Science Masters' Association has neglected great opportunities in the past half-dozen years of discussing the problems, when at Oxford and Cambridge, with the authorities."

Both these statements are true, and something should be done at the next meeting of the S.M.A. at Cambridge. A haphazard discussion is, however, useless. Definite proposals must be made, and if possible a select committee appointed to discuss them. NATURE, being almost the only authoritative journal read by dons and schoolmasters alike, could urge this most effectively.

Science masters may suggest, but they cannot act alone. The pace in the schools is set partly by the School and Higher Certificate Examinations, but principally by the entrance scholarship papers. No school can afford to ignore these without penalising its potential scholars. The same *impasse* has been reached as in disarmament conferences; all desire to reduce the standard, but each is afraid to begin.

How furious the pace is in the schools is not realised by everyone, least of all perhaps by the university examiners. The School Certificate is a very elementary