have thus a striking confirmation of Prof. Bragg's views.

Observations on the scattering of light by concentrated solutions of salts and by organic vapours containing the groups in question have been undertaken. One may venture confidently to predict the results to be expected. C. V. RAMAN.

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June 10.

The Reduction of Carbonic Oxide.

EVEN politicians are attracted to this problem and see in it not red but the oils of to-morrow. If peers speculate in futures, why not we plebeian sciencers, who give our lives to such matters, not a princely two days or so? The victim of a pernicious complaint contracted in the service of the British Association in the granitic environment of Aberdeen, pursuing the vicious line of thought which has afflicted me since 1885, I have recently been led to make logical use of my singular views on the course of chemical change and apply them fully to this most remarkable, perhaps *the* most remarkable, of molecules—carbonic oxide. No other molecule has 'taken us in' so long. All my life I have been seeking to fathom its mysterious depths: even now I don't feel in safe soundings.

I have argued, before the Royal Society and at the recent Solvay Conference, that it is not directly oxidisable by oxygen: the potential of the circuit would be too low. Prof. Bone and I are duelling over this issue at the moment: the foils are to be without buttons.

If my line of thought regarding its oxidation be sound—I seem to see signs that the force of facts is beginning to tell in its favour, at the same time that trousers are no longer all built turned up, those who dabble in science being as unable as are ordinary mortals to follow one fashion for ever—the reverse operation, the direct reduction of the gas by hydrogen, should be equally impossible, catalyst or no catalyst. Some adjuvant action must intervene to effect reduction if the carbonic oxide-hydrogen potential be below the oxygen-hydrogen potential. F. Fischer's suggestion that the process is an indirect one is, therefore, of special interest. The modifications of the fundamental equation given by Messrs. Elvin and Nash (NATURE, July 31, p. 154) are no more likely than that equation is as an expression of the character of the chemical change. Metallic carbonyls are perhaps concerned in the transformations.

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Operation of Fog-Signals from a Distance.

IN the issue of NATURE for July 10, p. 58, reference is made to an installation for the operation of fog-signals from a distance. I wish to direct attention to two misstatements. The apparatus is not automatic in the strict sense of the term, as it requires to be started and stopped by human agency. The statement "These guns are the only automatic signals at present in use" may apply to the Clyde, but there are two lighthouses in the port of Dublin which are equipped with automatic fog-signalling apparatus, and these have been in operation there for almost two years. The system in Dublin depends on the interruption of a beam of light by fog. The light beam traverses the channel in an oblique direction over a distance of about half a mile, and the apparatus upon which the light acts is so arranged as to respond when the visibility falls to a dangerous degree. These lighthouses in Dublin were undoubtedly the first completely automatic lighthouses to be in operation. JOHN J. DOWLING.

University College,
Dublin, July 13.

I REGRET to have to confess ignorance about the two lighthouses in Dublin Bay. It would be of interest to know whether smoke from a passing steamer affecting the beam of light causes the 'guns' to act. I am well aware that engineers have often discussed the proper use of the word 'automatic.' Automatic telephony, for example, is not automatic in the strict sense of the term. It would take too long to discuss this fully, but personally I object to 'semi-automatic.'

THE WRITER OF THE NOTE.

Scientific Neglect of the Mas d'Azil.

L'ÉTAT d'abandon que l'illustre écrivain M. Wells signale pour la caverne du Mas d'Azil est réel et fort regrettable, bien que les conséquences en soient probablement moins graves qu'il ne pense. Elle appartient à l'état, mais la commune en a l'usage de temps immémorial. Le cantonnier chargé de l'entretien de la route départementale qui la traverse en est le gardien officiel; c'est lui qui fait visiter les galeries obscures, plus intéressantes par le pittoresque que pour la science préhistorique, bien que de rares dessins pariétaux s'y rencontrent, et, deci-delà, quelques menus vestiges de fréquentation humaine. Sur la rive droite, le point important était la salle du Foyer et sa galerie inférieur. La salle du Foyer a été fouillée depuis longtemps dans sa totalité par Piette, Ladavèze, Maury, etc., et en dernier lieu (1901–1902) par moi-même. Je doute qu'elle contienne actuellement autre chose que les déblais de ces fouilles, sauf son couloir inférieur, où existent quelques peintures étudiées par le Comte Bégouen et moi. Les couches archéologiques peu épaisses qui y subsistent vers le fond sont sans doute l'objet des grattages dont M. Wells nous entretient. Plus grave est le bouleversement réalisé l'année dernière dans cette région de la grotte par la municipalité pour y installer un théâtre. Mais je ne crois pas que les lieux de la caverne contenant encore du gisement, placés sur l'autre rive, aient été touchés récemment: une épaisse couche de pierrailles et de terre poudreuse les défend bien. H. BREUIL.

Preservation of Mammalian Spermatozoa.

IT may be of interest that experiments on the preservation 'in vitro' of mammalian spermatozoa show some prospect of successful application to the transport of semen to a distance; a problem of considerable importance in animal husbandry. Spermatozoa from a rabbit were sent by post from Cambridge to the Animal Breeding Research Department, University of Edinburgh. From 5 does inseminated, 46-49 hours after despatch, 3 produced litters of 8, 11, and 2 respectively. One doe died without diagnosis of pregnancy and one proved infertile.

Although the technique excludes the practical application of this particular method to the domesticated animals, further experiments are in progress, and it is hoped that these difficulties will be overcome.

ARTHUR WALTON.

Institute of Animal Nutrition,
Cambridge, July 29.