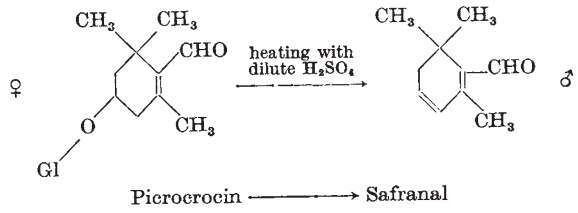
The chemical identification of the egg secretions, even of other sea-urchin species, would be of interest, while the importance of identifying the 'fertilizins' of *Nereis* and *Fucus* eggs can scarcely be over-estimated. The same applies to the acid expelled during the fertilization reaction, which might possibly be related to fertilizin. If the fertilizins do not have characteristic absorption spectra, their concentration and identification would present almost insuperable difficulties were it not for their biological activity in increasing the oxygen consumption of spermatozoa and in exerting a chemotactic influence. Eggs are not alone in producing a substance which has an effect on the gametes of the opposite sex. There is little doubt that the semen of *Echinarachnius* and *Asterias* contains a substance which induces females to spawn, though in the case of *Nereis limbata*, the male spawns when the surrounding sea water contains egg secretions of the same species[15]. This field, which also involves chemical substances with well-defined biological effects, has not so far been explored.

The subject of fertilization can scarcely be left without some reference to the absorbing work of Kuhn and Moewus[16], who allege that they can alter the 'sex' of *Chlamydomonas eugametos f. synoica* by treatment with extracts from male and female gametes of a dicœcious strain of this alga (summarized by Heilbron[17]). The behaviour of these extracts is stated to be almost completely reproduced by the glycoside picrocrocin (probably with gentiobiose substituted for glucose), in the case of the female-forming extract, and the aglucone safranal in the case of the male-forming extract.



Picrocrocin ⟶ Safranal

Experiments such as these, which involve an analysis of sexual differentiation in material which is not entirely suited to such analysis, require very careful biological examination before the interpretation of the results can be entirely accepted. A repetition of the experiments would be welcome.

Research into fertilization and parthenogenesis is still in its infancy, though the modern techniques of the organic chemist, the biochemist, and the biophysicist, have already produced valuable information in this field. Combined with the necessary biological knowledge and techniques, they can scarcely fail to produce further important results, of theoretical and applied interest, in a comparatively short time.

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OBITUARIES

Prof. E. G. Coker, F.R.S.

PROF. ERNEST GEORGE COKER, who died on April 9 in his seventy-seventh year, was well known to engineers all over the world for his work in developing a method of measurement of stress by photo-elasticity, to which he devoted many years of his distinguished career.

Prof. Coker commenced his engineering career in 1883 as a pupil under the Chief Mechanical Engineer of the London and North-Western Railway. After a few years at Crewe and Wolverton works, he went to the Royal College of Science and obtained the A.R.C.Sc. With the help of a Whitworth Exhibition and a scholarship, he went to the University of Edinburgh for an engineering course and was awarded the B.Sc. in 1892. Later he obtained the D.Sc. of that University. After a short period as assistant examiner at H.M. Patent Office, he took another engineering course, this time at Cambridge, and in 1896 gained first-class honours in the Mechanical Sciences Tripos ; eventually he was granted the M.A. degree. He returned to the Patent Office for two years.

In 1898 Coker was appointed assistant professor at McGill University, Montreal, and five years later became associate professor. He returned to England in 1905 to take up the appointment of professor of mechanical engineering and applied mathematics at the City and Guilds of London Technical College, Finsbury, where he remained until 1914. During this period he was responsible for the building and equipping of a new engineering laboratory. In 1914 he became Kennedy professor of civil and mechanical engineering in the University of London, University College, where he remained until his retirement in 1934.

During his stay in Canada, Prof. Coker carried out a great deal of research work in the testing of materials and in hydraulics; but it was at Finsbury Technical College that he began to develop his main research work on photo-elasticity, which he continued at University College. The stress-optical properties of transparent materials under polarized light had been discovered by Brewster so early as 1816, and more recently attempts had been made to apply the principle to engineering problems, using models made of glass. Prof. Coker used for his experiments models made of xylonite, a material which is not brittle and is easily cut to any desired shape. He applied the method of photo-elasticity to the determination of stress distribution in many types of machine components and structural elements, devising much ingenious apparatus and establishing a standard technique. He published numerous papers on the subject, and delivered many public lectures. In collaboration with his colleague at University College, the late Prof. L. N. G. Filon, he published a comprehensive text-book entitled "Photo-Elasticity".

Prof. Coker's distinctions included the fellowship of the Royal Society, from which he received the Rumford Medal in 1936, and the fellowship of the Royal Society of Edinburgh. He was a member of the Institution of Civil Engineers and of the Institution of Mechanical Engineers. By the former he was awarded the Telford Medal in 1921 and the Howard Quinquennial Medal in 1932, and from the latter he received the Thomas Hawksley Medal in 1922.

G. T. R. HILL