lishing. Furthermore, many of these problems could be handled with but little equipment and at small expense. Why not start the student on such problems and give him a chance at learning research methods before graduation?

To be sure, such problems do not extend our knowledge of scientific laws, and so it might not be proper to call it scientific research. Instead, they are a study in finding what laws apply to particular cases in which we are interested. It is technical research rather than scientific. But it is just as truly research and uses the same methods, but the subject-matter is more in line with the age of the student.

To try to put such problems into the college course does not seem practical. One difficulty is the difference in the ability of the student and the professor to handle the problem. The professor would want the results and would see that they were obtained promptly, in this way reducing the research practically to the position of present-day laboratory experiments.

I would, therefore, suggest that the student go into the industry for his first experience at research, to some place where the results of his work would be appreciated from a financial as well as from an educational standpoint, and where he can obtain results on his own initiative that are worth publishing. As he sees the need for more general courses in various subjects, he can take these up with more interest than would be possible without his research practice.

Several advertisements have appeared recently in SCIENCE for a boy to do exactly this, but so far not a single reply has been received, not even a request for further particulars. What can be the reason? Do all parents feel that the college is the only place to study research? Or possibly they do not want their sons to go into research work? Do they feel that no business firm would take on a young boy for such purposes, and so there must be some hidden deceit about the advertisement? Is the fact that the boy receives pay instead of having to pay for it the obstacle? Or what is the reason that not a single person has been sufficiently interested to inquire about it?

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## REACTIONS OF CARBON DISULFIDE WITH ALDEHYDES

IN the presence of metallic sodium, carbon disulfide condenses with bodies containing "active" hydrogen to give unstable dithio acids. The reaction has been applied to compounds which contain the group

$$-\overset{\overset{O}{\|}}{C}H \quad \text{or} \quad -\overset{\overset{O}{\|}}{C}-\overset{\overset{H}{|}}{C}-$$

(aldehydes, ketones, esters, salts of organic acids) and is probably general for all substances capable of aldol condensation.

Aldehydes yield α-keto dithio acids, with ketones ethers of dithio acids are produced; ethyl formate reacts irregularly, giving sulfo-methane dicarboxylic acid. The new dithio acids have only been studied through their salts, etc.; the free acids are very unstable and have so far not been isolated.

Further work will extend the study of this reaction to other types of substances which undergo aldol condensation, and will report the preparation of the esters of the new dithio acids, which appear to be stable.

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## SCIENTIFIC AND INDUSTRIAL RESEARCH[1]

THE Report of the Committee of the Privy Council for Scientific and Industrial Research for 1922–23 shows the far-reaching importance of the work carried on under the auspices of this committee. The civil departments concerned in public administration, it is noted, are making larger use of the machinery now existing for the scientific attack upon problems that affect them. As part of the policy of coordination, periodic conferences have been held between representatives of the Department of Scientific and Industrial Research, the Development Commission and the Medical Research Council, at which the biological secretary of the Royal Society has been present. These conferences, the report states, have provided valuable opportunities for the consideration of such matters as the responsibility for the conduct of investigations at borderlines, the possibility of cooperative action in the conduct of investigations in which more than one of these departments may be interested, and the continuance of research work which has developed in such a way as to bring it outside the scope of the fund originally aiding it. These discussions have helped to define the common problems of human and animal disease, and have emphasized the interdependence of biological and physical research. They have driven home to the committee the conviction that a national policy in research, complex though it might be and directed by diverse and suitably designed organs, must be conceived and implemented as a unity. A series of conferences were held during the year with the management of the British Empire Exhibition, and a departmental committee was appointed to consider how science and the application of science to industries could best be represented. It was agreed with the exhibition authorities that they should ap-

[1] *The British Medical Journal.*