



Fig. 2. Experimental points from which Fig. 1 is derived.

extensive study of the $K\alpha$ satellite lines by means of a double spectrometer and an ionization chamber. He found four components for the $K\alpha_3\alpha_4$ group, the two principal ones for chromium having the following wave-lengths: $K\alpha_3 = 2.27443$ kX.; $K\alpha_4 = 2.27290$ kX. The photometry of the 211 lines confirms the presence of this extra reflexion, as shown by Figs. 1 and 2.

We have detected also the $K\alpha_3\alpha_4$ group with nickel, cobalt and iron radiations, using specimens of pure elements which give a strong high-angle reflexion. The line was weaker with the shorter wave-lengths, in agreement with Parratt's data².

To the best of our knowledge, this is the first time that the $K\alpha_3\alpha_4$ group has been definitely detected on powder photographs. The possibility of the appearance of this reflexion, the intensity of which is about 1/100 of the intensity of $K\alpha_1$, should be borne in mind when strong high-angles lines occur on X-ray photographs.

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¹ Siegbahn, "Spektroskopie der Röntgenstrahlen" (Julius Springer, 1931). Compton and Allison, "X-Rays in Theory and Experiment" (D. van Nostrand Co., Inc., 1935).

² Parratt, *Phys. Rev.*, **50**, 1 (1936).

Post-War University Education

WHILE possible changes in university education after the War are being considered, I should like to urge the importance of one problem which has hitherto obtained little prominence. Anyone who had much contact with students before the War could not fail to be impressed by the specialized nature of most of their knowledge. For example, a graduate in classics was often completely ignorant of scientific thought, while a graduate in any of the sciences, as a rule, knew little of humanistic subjects beyond some French and German. Moreover, there is little doubt that this increasing departmentalization of the universities was encouraging the tendency, so disastrous at the present time, whereby what is scientific is divorced from humanistic purposes. The regulation at some universities compelling an honours student to take one or two classes outside his honours group, while good in theory, fails in practice, because these other classes are much too narrow in their aims and are, in fact, often the first-year courses for students who propose taking honours in them.

How can this be remedied? It would be a retrograde step to decrease the specialization of the honours groups, and the proposal of the British Association Committee on Post-War University Education to introduce a new honours group, called "philosophy, natural and social", does not solve the present difficulty, namely, how students, in honours groups which already exist, can acquire a more balanced and mature mental outlook.

The best solution, it seems to me, is the introduction of a course dealing with what is called in the United States "The History of Ideas". Such a course would deal with the growth and development of conceptions which play a great part in our intellectual life to-day—conceptions such as individual freedom, social equality, scientific law, moral obligation, evolution, the nature of scientific method, and so on. At universities where attendance at lectures is, to some extent, compulsory, I should like to see such a course compulsory for all honours students in the year before they sit for their final examination. They would at this stage be more mature than freshmen and yet not be under the strain of working for their degree examination. At universities where attendance at lectures is entirely voluntary, I should like to see those students who did not attend the course compelled to take the examination in it, so that they would at least have been forced to read books like Whitehead's "Science and the Modern World" and Coulton's "Medieval Panorama", and to discuss some of the problems raised by them under the guidance of a tutor. I am urging this step for honours students only. Undergraduates who are reading for a pass degree are at present able to study a considerably wider range of subjects, and the problem is therefore not so pressing for them. Besides, it is most necessary that those who are intellectually the most able should have this broad background against which they can set their own specialized activity.

If the desirability or, as I should prefer, the necessity of such a course is admitted, it would not be difficult to organize it. The best means, I think, would be for it to be given in university departments of education. At present such departments give courses on the history of education, and while these cover to some extent the rather dry topics dealt with by text-books appearing under that title, they deal mainly (or should deal mainly) precisely with the history of those ideas which have had a great influence on the development or education of mankind. It would no doubt mean that the departments concerned would have to make some domestic alterations, but it does not seem that any fundamental changes would be necessary.

It may be objected that the numbers for such a course would be much too large. If that is so, it might be necessary for a few years to limit the number taking it until a large enough staff could be obtained to deal with them. But that is certainly not a permanent objection. I understand, although I have no direct knowledge, that a few years ago it was made compulsory for all Harvard undergraduates to take a course in American history. It seems to me the time is now ripe for all British undergraduates, of sufficiently high intellectual capabilities, to learn the history, not of this or of some other nation, but of what is common to all nations—the ideas which are the basis of the modern world.

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