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EDUCATION FOR CULTURE AND CITIZENSHIP

THERE has been of late much adverse criticism of the way in which the sciences are taught in schools and colleges of Great Britain. This criticism takes a variety of forms. It is asserted that the work is too specialized, that it is too academic, or that too much attention is devoted to the teaching of technique. The chorus of complaint may indicate that there is something wrong, but it does not follow that the fault is entirely with the teachers; it is just as likely to lie with those who complain, and the danger is that their specious criticisms may influence the teaching in a wrong direction. If biological teaching, for example, is centred around man, as many educationists would have it, that teaching is bound to become subjective, and trouble is certain to arise (see p. 457). It is essential that the objective attitude should be cultivated and developed as fully as possible in all branches of science teaching.

Furthermore, some schools have taken up biology, for example, because it seemed to be becoming 'fashionable', and the school must be in the swim. An economic motive arises from the increase in the number of entrants into the medical profession, and from an erroneous idea that there is a large number of research posts in biology. It seems then that this subject has got into the curriculum partly upon sufferance and partly because a demand for it has arisen in the public mind. It is only here and there that it is taught as a worthy subject which provides appropriate training for a certain type of mind (a type more common than is often appreciated), and there is not as yet a sufficient realization that the training is as valuable as that afforded by a study of the so-called more exact sciences.

All sound teaching of the science subjects rests on several things, but above all on careful and accurate observation. Such careful and accurate observation is not within the capacity of an untrained observer; the students have to be taught to observe. Critical observation breeds a critical habit of mind and a capacity for using the information obtained by the observation. It provokes and promotes thought. A person trained in the habit of observation applies that habit to all with which he has to deal. Training in observation and in the habit of mind it engenders is one great contribution which science has to make to education.

To train students in accurate observation is a severe test of the teacher's ability. Many students, rightly and naturally, take much pleasure in making preparations, in analysis, in dissection and in compiling books of drawings, but these things by themselves are not science. From the over-emphasis of technique and the memorizing of too many facts comes the widespread and erroneous opinion among those who know little and care less about science that skill in technique and the knowledge of a long list of forbidding terms make up the whole of science. It should be recognized that these are but means to the end, which is training in the art of close and accurate

observation. There is a value also in the confidence the student gets from his ability to do something in a workman-like manner. Sound work in the sciences acts as a protection against over-hasty generalizations. The diversity which is one of the charms of plants and animals, for example, stimulates curiosity and keeps the mind alert. It makes the observer watchful, and it encourages a habit of mind which demands evidence rather than unsupported statements.

Practical work is important, but it must be kept in correct perspective. It must be within the capacities of the students; for example, in biological work it will be mainly morphological, with a functional bias. Elaborately developed cytology and physiology do not provide suitable practical exercises, and consequently information has to be got from books rather than from personal experience.

There are special difficulties in teaching biology to town-bred children, though this is not true of all the sciences. While the town dweller is denied full access to much of scientific interest, yet he often has access to museums, zoos, gardens, works and factories which can serve him well, and could serve him better if close co-operation were established between controlling authorities. The cinema is becoming a more and more efficient instrument of instruction, and it can and should be used to supply something at least to compensate the disadvantages inevitably suffered by the student living in a large town. But the films must not take the place of direct work.

It is probably true that the greatest hindrance to science teaching is the examination system. Rightly or wrongly, teachers may consider it their main task to get their students through examinations, and if they do not themselves think so, that point of view may be imposed on them either by the administration or by public opinion working through the administration. The objective becomes the piling up of examination successes, and the bigger and more impressive the pile, the better the work of the school and of the teacher is supposed to be. All that being so, it is not remarkable that the schools may aim, not merely at getting as many examination successes as possible, but may seek to acquire additional merit by pushing as many pupils as possible through the stiffest and showiest examinations available. The subjects certainly suffer, and there is more than a suspicion that the welfare of the students may be sacrificed to the chance of academic successes for the school.

All this reacts on the mentality of the students, who get more and more the idea that the aim of their schooling is to enable them to pass examinations; the more stupid, and a very few with an abnormal dose of common sense may escape this. To pass the more showy examinations, specialization is thought to be needed, and this thought is gaining ground to such an extent that there is even talk of introducing research into the schools, a charming illustration of a tendency not unknown in educational schemes, that of starting a building with the roof and working downwards. Following this supposed need for specialization, we find harassed teachers attending scientific meetings, hastily grabbing up such crumbs as they can snatch, and decanting the fragmented

results of recent research on their unfortunate students in the hope that this will scrape together a few more marks.

It seems clear that we must have some form of school-leaving examination to provide a test of how the machine is working, and to give an aim, for unless there is an objective the work is likely to be diffuse and pointless. But the present custom of having two such examinations, one at a lower and one at a higher level, is to be deplored. One examination should be sufficient, and it should be organized so as to provide an adequate test of the general education of candidates aged between fifteen and sixteen years. If the pupils stay in the school beyond the age of sixteen, they should not then be pushed on to specialized work; that work should be done in technical institutions or in universities.

Older students who have given evidence of possessing satisfactory general competence should be allowed, during the later part of their school life, a temporary respite from examinations, and should be able for at least a year to pursue with some freedom whatever line of learning attracts them. That liberty, following several years of preparation for the School Certificate examination, would loosen up their mental joints and enable them, before they are caught up into industry or into a period of specialized training for a profession, to look around somewhat and perceive that scholarship is something more than textbooks and formal lessons.

During this 'sabbatical year' the student might look aside somewhat from those subjects in which he may afterwards specialize. This would be the opportunity for the future student of science to give some time to arts subjects, and for the future arts student to profit from instruction in science; both groups would benefit from some mathematics at this stage. At present, the student on the science side may be stultified by the repetition of the same kind of chemistry and physics year after year during his school life. He could profit well from instruction in the use of English during this period of recuperation (see p. 454). For some reason the writing of essays now seems to be taboo, and the study of English literature does not seem to be favoured. All this may explain the frequent and shocking illiteracy of students entering the universities. Let the student in this year of his freedom dip, as he feels moved, into the glories of English literature, but let there be no set books, no commentaries and no annotated editions.

If, for many, the older classics are too heavy going, why not use the moderns whose outlook is more in tune with our own? Let the cinema be studied critically; despite the welter of nonsense, there is much that is excellent. The gramophone and the radio will give an introduction to music and musical appreciation, and there should be ample time for history and geography, both studied with an eye to modern affairs and the problems of citizenship. Lastly, there should be the conversational study of at least one foreign language, French, German or Spanish, to get the student to lose his self-consciousness and to talk. Physical training is also desirable at this stage.

At the end of the 'sabbatical' year, those students who intend to train for the more technical side of commerce or for one of the professions should proceed for their specialized training to an appropriate college, where they would be freed from the school atmosphere and where they could begin to make wider contacts than are possible in a school. Their preliminary training for an examination of intermediate grade should not extend over more than one academic year. That period is amply sufficient for any college student of ordinary ability and industry, and there are no advantages, and very marked disadvantages, in spreading that phase of the work over two years, as is commonly done in schools. By taking the preparation for the first university examination out of the schools, time would be provided in the schools for some final inculcation of general culture, and, if one may judge from the results of certain public examinations, the transfer of the intermediate work to other institutions would materially improve the chances of the students in passing their preliminary professional examination at the first attempt—a very desirable thing.

The idea here expressed is to provide a break between the generalized and the specialized periods of the education of a pupil, not merely to give an opportunity for the acquisition of some general culture, but to mark that there is at this stage a change in the character and conditions of the work. The non-specialized training in particular could and should be made to support some simple instruction on the more obvious connexions between science and ordinary life. Thus the adolescent, before he is plunged into the task of completing his professional training and before he is immersed in establishing his position, is given the opportunity of getting a general view of things which a year of freedom from training for an examination would offer.

The aim of education is not to get students through examinations. When a child has spent several of his most impressionable years in being trained to that end, it is not surprising that he finishes with an altogether wrong idea of the importance of examinations. A transitional period between school and college, with no examination in immediate prospect, might well awaken broader ideas and broader ideals, and so help on the development of that most desirable type of citizen, the man who has self-respect because he can think independently and can express himself clearly to others. Any ordinary man would be outraged if it were suggested to him that someone should eat his dinner, digest it, and then pass it on; few ordinary men are as yet outraged because their mental food is commonly treated in this fashion. This is but one of the many ideas which might become more common with the wider diffusion of generalized teaching in science, and with that wider diffusion and the closer study of the impact of science upon society there may also come the realization that the present organization of human society is largely unscientific. Society cannot become a better thing for the average common man until it is in accord with the scientific principles which that man can appreciate and approve.

A SENTIMENTAL JOURNEY

Black Lamb and Grey Falcon

The Record of a Journey through Yugoslavia in 1937. By Rebecca West. Vol. 1. Pp. xi+653+16 plates. Vol. 2. Pp. vii+586+16 plates. (London: Macmillan and Co., Ltd., 1941.) 42s. net.

IN the eighteenth century, it was a diversion for those who could afford it to travel in a post-chaise through foreign parts, and thereafter to publish a gossiping guide, more or less observant and outspoken. Some of these works have become classics, and the practice is happily not extinct. But now one must go farther, one may travel faster, and by appointment one can see more various people; one also writes more gaudily than Laurence Sterne.

Here is a minutely annotated narrative of a spring tour in Yugoslavia in 1936. Rebecca West, already proficient in fiction, biography, and criticism, had lectured there the year before, and was fascinated by the land and the people. Though, as she says, she "knew quite a lot of Hapsburg history", she "knew nothing about the South Slavs"; so her industry has been great. But on her second visit she had a Government car with radio—a novel type of traffic-signal—a husband replete with common sense and restoratives, and as courier a Serbian official, Constantine, of Jewish descent, and resilient self-esteem, "one of the most gifted and learned men in Europe"; so the Serbian point of view was fully, though not exclusively, supplied. Of the Croat aspect of Yugoslavian affairs she is less well informed; her rare references to the Greeks are unsympathetic; she has no good word for Bulgarians, and she deliberately omits from her bibliography certain writers with whom she disagrees. But she liked the Albanians she met, and heard well of Albanians in general from her Serbian friends, and from Gospodin Mac, the wise manager of the Stan-Trg mine. As her own opinions incline to the Left, it was candid to describe as the most happy and prosperous community, where age-long feuds seemed to fade into mere neighbourliness, one created by foreign capitalists and governed by a Scottish dictator. Part of the trip was marred by Constantine's German wife, a repulsive character, cruelly drawn; and something went wrong, too, with Constantine; he was already ill at ease before he fades out of the book. Among all these aids and handicaps, two things are obvious: the ingenuous good nature of all classes of people, except a few political agents, and the personal achievement of Rebecca West and her husband, in eliciting so much intimate self-revelation and local commentary on what they were so fortunate as to see. Of the dialogues, some recall Thucydides' admission that his "speeches" were what might appropriately have been said.

Though the book, of some 1,200 pages, grows longer as one reads it, and has defects inherent in its circumstances and its technique, it has value for several reasons. First, it is a brilliant kaleidoscope of Balkan landscape, reviving treasured memories by its bold characterization of types, and insistence on the land's austere grip over man's fortunes, and on other men's devastation of laborious achievement. Some of this word-painting is difficult, like the pea- and plum-coloured landscapes that are skyed at the Academy; for colours, forms, and processes are oddly named—"savage" green, "sissy" flowers, "virile" water, "anfractuous" landscape, "enchancing camber" (the *profile* of an old bridge). Lake Scutari