

THE SAMPLING OF COAL IN THE MINE.

Under this caption the United States Bureau of Mines has brought out its first technical paper. The subject is one of vast commercial import, and, hence, of high technical interest. Dr. Joseph A. Holmes, the Director of the Bureau, is the author. The purpose of the paper is to describe the methods followed by the Bureau and the Survey in taking commercially representative samples of beds of coal.

After describing an ingenious and compact mine sampling kit, Dr. Holmes gives preliminary details, and proceeds to describe the method of sampling. Much emphasis is laid upon the necessity of cleaning thoroughly the face to be sampled, and of including in the sample all material that is usually comprised in the daily shipments. Only such material as is ordinarily discarded by the miner should be omitted.

Specific instructions follow as to the precise method of sampling a working face. First, the floor is to be cleaned and the sampling cloth spread close to the face. Next, a perpendicular cut 2 inches deep and 6 inches wide, or 3 inches deep and 4 inches wide if coal be soft, is made from roof to floor down the side of a foot-wide cut previously made. The cut should be uniform in width and depth. Enough coal should be chipped off to make a sample weighing at least six pounds for each foot of the width of the seam.

The sample is put through a $\frac{1}{2}$ -inch or $\frac{3}{8}$ -inch screen, and is mixed and quartered as usual. A suitable sample can is then filled completely and sealed. It is important that the entire series of operations be carried on in the mine. If this precaution be disregarded, errors will creep in. Exposing the coal to the outside atmosphere is found to introduce abnormal factors.

Investigation of the loss of volatile constituents when coal is freshly mined, and knowledge of the effects of weathering upon many fuels, have led the Bureau to devise and distribute exceedingly complete blank forms whereupon is transcribed the history of any given sample. These forms embrace details of the physical features of the mine, of the equipment, of the humidity report, of the explosives used, of general mining and marketing conditions, and of the sample itself. Thus the sample and the final analysis are given a value that they could not otherwise have. And herein is the point of the whole matter. There are available thousands of analyses of Canadian coals, analyses that are either misleading or meaningless because of the fact that there is no authentic record of how, and why, and when they were taken. Modern commercial engineering will not tolerate that slipshod professional work. Time was when laboratory results were accepted at their face value. Now, however, it is being more and more widely recognized, even in lay circles, that sampling is one of the most difficult and responsible tasks, and that few men are temperamentally fitted to do it

fairly. But, no matter with what skill the sample may be taken, it cannot be accepted commercially without full data as to every item of its history.

SCIENCE vs. GREEK.

In many respects the educational systems of to-day are medieval. Of the number of compulsory subjects of study that are inflicted upon our youth, many have no relation either to real life or to real culture. This fact is being impressed more and more deeply upon British educationists. No one has put the case more cogently than has Sir Rae Lankester. Writing in "The Nineteenth Century and After," Sir Rae, whilst disclaiming any desire to see natural science take exclusive possession of the educational field, condemns strongly the domination of that field by Latin and Greek. The whole system of instruction and of competitive examination he scores as being an injurious perversion. He declares that "the school-teaching of the old knowledge has become sadly unreal, perfunctory, and slow The husk of it is mistaken for the kernel, the letter for the spirit, mere dexterity and verbal acrobatics for true learning and sound mental discipline. We can in the future retain some study of ancient history and literature, and even one of the classical languages—namely, Latin—while giving serious attention to the new knowledge—the natural science of our present Renaissance."

This pronouncement is all the more interesting as Sir Rae was, in his youth, a product of the system that he criticizes. At St. Paul's he was the head-boy and prizewinner in successive classes of the Latin and Greek curriculum.

The cardinal point of the article is presented thus: "It is the business of the 'educator' to ascertain the various degrees and kinds of 'educability' in the young, and to adapt the course of education administered to them to their varying aptitudes." The youth of to-day must not be over-burdened with useless information. But his intelligence must be so trained as to open for him all desired branches of knowledge. The effect of proper study of the sciences is lasting and practically beneficent; the effect of unnecessary study of the dead languages is entirely mischievous.

Amongst the sciences to be taught, Sir Rae includes chemistry and geology. He recommends that these subjects be carried farthest. This is something for Canadian educationists to take to heart. A sweeping change must soon be brought about. Our young men should learn at school and at college more about nature, more about commerce, and less about the amours of heathen gods.

Each reading man can acquire a knowledge of the humanities after his formal education is completed. Every Canadian citizen should be possessed of a sound grasp of the fundamentals of natural science.