CHEMISTS WORK ON IDEAL FUEL FROM COAL

The scientific world is at work on a new fuel from coal which will be smokeless and almost wasteless, for it is expected to save a large portion of the three-fourths ton of coal that now goes up the chimney for every ton burned in the ordinary way. At a recent meeting of the American Chemical Society chemists from all over the United States discussed the pros and cons of "semi-coke", the proposed new fuel.

The difficulties in the way are more economic than scientific. "Semi-coke" is to be made by a low temperature process which requires entirely different apparatus from that used in making ordinary coke in by-product ovens. The by-products of semi-coke are different from those of common coke and their economic value has not been established. In fact, it presents an entirely new group of materials for chemists to learn how to utilize.

In the old coke making process the four primary products recovered, gas, tar, ammonia and light oils, are raw materials in the manufacture of explosives, fertilizers, dyes, and chemicals used in American factories. The coke is used mainly in the making of steel. A small amount is used for domestic fuels, especially during war emergencies and coal strikes, but the housewife thinks it is a poor product to burn in the kitchen range.

The new semi-coke, because it is heated at a low temperature, retains many of the higher oils and other combustible substances. It is smokeless and said to burn as easily as coal and much more readily than finished coke. The gases, oils and ammonia that are lost in smoke when coal is burned are recovered. Semi-coke is therefore hailed by many scientists as the solution for a world problem.

With the world coal supply going down and the cost of production, labor and transportation going up, every coal-using country is trying to use coal less and get more out of it. Great Britain hopes to get fuel oil for her navy from the part of the domestically burned coal that is now wasted. In England as in the United States it is a question of what to do with the by-products of semi-coke, and how they can be made to pay. The new method yields more tar, but it is thin and oily and unlike the well-known coal tar. The yields of gas and ammonia are less, but the gas is much richer and higher in fuel value.

"Making semi-coke by low temperature carbonization of coal retains all its intial interest," said Prof. S. W. Parr of the University of Illinois, chairman of the division of gas and fuel chemistry of the American Chemical Society meeting, "in spite of the preponderating element of adverse circumstances from the industrial viewpoint, such as costs of installation, operating expense and the undetermined value of the by-products, especially tar and ammonia."

The properties of these new by-products are already being studied by chemists. Summer R. Church of New York City who has studied the by-products of low temperature carbonization of Illinois coal found that satisfactory oils and pitches were obtained by refining the new tar in the old way.

"The new tars possess to a surprising degree the characteristics of the most desirable types of high temperature tar,"Mr. Church said. "An important feature of the new tars is their content of tar acids, falling between phenol and cresols in boiling range."

The strong red color of tar liquor and disinfectant emulsions made from low temperature tar oils, the cause of which has puzzled chemists, has handicapped the marketing of low temperature tar, Stephen P. Burke and Solomon Caplan of Long Island City told members of the American Chemical Society. They explained that the objectionable color could now be extracted by means of a borax solution.

The amount of heat necessary to carbonize various types of coal at the comparatively low temperature of 1100 degrees Fahrenheit has been measured by Stephen P. Burke and V. F. Parry of Long Island City. They found that Pittsburgh coal required only 7 British thermal units of heat energy while Utah non-coking coal took 37 and Denver sub-bituminous coal 81 units.

DYESTUFFS USED TO MAKE BETTER RUBBER

Dyes and other organic compounds are now being used for prolonging the life of rubber as well as for speeding up the vulcanizing process in making the finished product from the sticky crude plantation rubber. Donald H. Powers of Pennsgrove, N.J., described how the dyestuffs industry is thus helping the rubber manufacturer, at the meeting of the American Chemical Society at Philadelphia.

"Organic compounds have been used as accelerators in vulcanizing rubber for the past ten years," Mr. Powers said, "but the dye industry is now furnishing some of most widely used ones as well as developing newer and better ones. In addition, an organic anti-oxidant, a substance that slows up the aging of rubber, has been developed."

The world rubber situation will be profoundly affected when the secret of keeping rubber "alive" is solved. Rubber deteriorates fast on exposure to sunlight and under nearly all conditions to a varying extent. Chemists have been trying for years to find some substance with which to "dopo" the rubber and keep it from aging too fast. A new substance put on the market by the dyestuffs industry, Mr. Powers said, is already prolonging the life of rubber manyfold.

Before the use of organic dyestuffs in rubber products only a few inorganic colors were available, Mr. Powers said. But now a wide variety of shades is used producing stocks of superior products, and the dyestuffs industry is busy searching for new and still better compounds for use in rubber manufacturing.

NEW GLAND EXTRACT NOW MADE FOR COMMERCIAL USE

An extract of the parathyroidgland, a small ductless organ back of the thyroid gland in the neck, which controls the lime content of the blood, may soon be on the medicine shelf. A.M.Hjort and H.B.North of Detroit reported their successful preparation of this hormone from animal glands to the American Chemical Society which met recently at Philadelphia. The active substahce that does the work is believed to be a protein.
