British Adopt French Ruins

London to Restore Verdun, but Cemeteries Prevent Work on Outlying Villages.

NEWCASTLE ASSISTS ARRAS

Manchester Raising $250,000 to Lift Mezieres Out of Its Heap of Dust and Ashes—Raise Money for the Rheims Cathedral.

New York.—Despite the burden of their war debts and the heavy taxes in the billions of pounds sterling they poured into Europe to save civilization, the people of Great Britain still are finding means to help the stricken populace in the devastated regions of France.

Under the stimulus of a campaign directed by the central committee of the British League of Help, they are donating millions of dollars to repair, rebuild or restore public utilities, houses, villages and towns in the war-swept zones of France. More than 50 ruined towns and villages have been adopted by English cities and towns.

Verdun, that became immortal as one of the bloodiest battlefields of the entire war, has been adopted by the city and county of London. So great was the havoc wrought there by the enemy guns, so great the loss of life, and so numerous and thickly populated the cemeteries of the soldier dead, that many of the outlying villages may never be reclaimed. But Verdun proper, the city that "They Shall Not Pass," is to be restored in its entirety.

Boroughs Take Individual Action.

Aside from this several London boroughs are taking individual action. According to reports received by the foreign information department of the Bankers' Trust company, Kensington has adopted Souches, Wadsworth has undertaken to look after the needs of Villers-Plouich, and other boroughs are forming committees to raise funds to take care of other villages.

Manchester is raising £50,000 to help to resurrect the dust heap that once was Mezieres; and of this amount £11,000 already has been subscribed. Newcastle has undertaken to provide £20,000 for Arras, and has paid its second installment of the gift. On February 5, when the mayor of Arras visited Newcastle a check for 250,000 francs was handed to him.

And Oxford, Sheffield, Exeter, Evesham, Eastbourne, Cirencester and Birmingham have given and are giving to their capacity.

Oxford proposes to restore the water supply and to rebuild the school at Fayet. For this object, nearly £700 already has been collected.

Sheffield has adopted three towns and villages—Bapaume, Puisieux and Serre, all made famous in the battle of the Somme and in the great German drive in 1918. The fund in the hands of the lord mayor of Sheffield now stands at £5,000. Of this a first installment of 50,000 francs has been sent to Bapaume toward the establishment of a day nursery; and, at the special request of its mayor, a motor tractor has been forwarded to Puisieux.

Eversham Orders Cider Fruit Trees.

Exeter is undertaking to restore the water supply at Montdidier, where the American troops first went into the battle line, and has forwarded £2,000 to the mayor of that city. Evesham is raising £1,000 for Hebuterne, and has ordered 300 cider fruit trees from Holland. Eastbourne has sent to Bray-sur-Somme a gift of 5,000 francs, besides supplying that ruined village with goods and foodstuffs to the value of £500. Cirencester has equipped and is supporting a food kitchen for the school children of Passel and Ville, to which agricultural implements, sewing machines and clothing have been sent.

Birmingham has adopted Albert. As a first step, clothing, boots and blankets to the value of £500 have been sent, and more is to follow.

Apart from the organized assistance of the British League of Help, the British are raising a special fund for the restoration of the Rheims cathedral, and the Royal Agricultural society has organized a fund to supply cattle to the raided farms of French agriculturists. To this fund £70,000 already has been subscribed.

Drank 54,150 Glasses of Root Beer in One Year

Because he scheduled $541.50 in war tax on root beer during 1920, a Lithuanian coal miner of Springfield, Ill., was asked by John Pickering, collector of internal revenue, to look over his income tax again. After deducting his union dues, donations to churches and charities and war tax on theater tickets this man still had $1,541.50 for which to account. His root beer thirst cut his income to $1,000, he said.

To satisfy his cravings, according to his figures, the miner had to drink 148 glasses of root beer a day, or 54,150 glasses in a year.

Confiscating Big Store of Liquors

An alleged delivery of liquor by one of their drivers without a transportation permit resulted in a raid on the warehouse of the Singer Brothers in New York. The federal agents are shown listing some of the confiscated goods.

URGE NATION TO SAVE FORESTS

Joint Action of State and Federal Governments Necessary to Stop Destruction.

FOREST FIRES ONE PROBLEM

Largest and Most Important Field for Co-operation Is Fire Prevention—Cost of Protection Should be Shared by Private Owner.

Washington.—Need for public action to save the remaining forests of the United States from devastation, and to provide for timber production on lands already laid waste, was strongly urged by Col. W. B. Greeley, chief of the forest service, United States Department of Agriculture, at the hearings before the house agricultural committee on the Snell bill.

The bill authorizes and directs the secretary of agriculture, in co-operation with the various states or other suitable agencies, to recommend the requirements essential for protecting timbered and cut-over land from fire, refreshing denuded lands, and cutting and removing timber crops so that continuous production of timber will be promoted. To bring into effect these requirements, and with a view to furnishing a continuous supply of timber for the use and necessities of the public, co-operation between the federal government and the states is authorized, on such conditions as the secretary of agriculture may determine to be fair and reasonable.

Expenses Borne Jointly.

Federal expenditures under co-operative agreements with states would, under the bill, have to be at least equaled by state expenditures derived either from general taxation or from owners of forest lands under state requirements. The bill also provides for a survey of the forest resources and requirements of the country, for experiments and investigations in reforestation and methods of cutting and utilizing timber, for enlarged purchases of lands for federal administration as national forests, and for various other features of a national program of forestry.

In urging the necessity for action, Colonel Greeley pointed out that the essential problem of providing for future needs is a national one.

"New York," the colonel said, "imports nine-tenths of the lumber which she requires. Pennsylvania imports four-fifths, while a large group of middle western states import 97 per cent of their wood. The bulk of our paper comes from half a dozen states. The growing of timber on enormous areas of land adapted by nature to that purpose and scattered throughout 39 states is just as much a national necessity and just as much a matter for national action as the encouragement of agriculture or the maintenance of interstate transportation.

"The growing of timber cannot be left to private initiative alone. Under the bill the federal government will assume the technical leadership of the reforestation movement throughout the country. While in the prairie states co-operation would have to deal chiefly with tree planting, in other states it should cover technical methods of fire prevention, of disposal of debris left in logging, of cutting various types of timber so as to secure a new crop of the kind desired, and the like.

"The largest and most important field of co-operation, however, in all states containing extensive forest areas is in the prevention of forest fires. This is the first step to a continuous supply of timber. Once the vast area of cut-over land suitable for timber production is really protected from forest fires, three-quarters of our forest problem is solved.

"The cost of forest protection should be shared by the public and the private owner. But fire prevention is not an end in itself. The reforestation of timber-growing land and the actual production of timber is the real objective. In no instances should federal funds be expended unless the state carries out the requirements found necessary by the federal forest service to make timber grow."

Buys Sheepskin Coats.

Washington.—The United States public health service has just bought 2,500 sheepskin coats for the tuberculous patients in its hospitals, so that they may be able to sit out in the air and the sun this winter. It's the fresh air that counts.

Our New Postmaster on the Job

Postmaster General Hays is making inspection visits to the big cities and outlining his policy of "a square deal" to postal employees. The photograph shows him in the distributing department of the New York postoffice. Mr. Hays, as chairman of the National Republican committee, made a reputation as a manager and harmonizer.

New Occupation of Germany by Allied Troops

Belgian troops marching past the Frederick statue in Dusseldorf to occupy this important German city in the Rhine territory. Insert—A French machine gun on the famous Dusseldorf bridge.

Coal Structure Being Studied

Bureau of Mines Conducting Microscopic Investigation at Pittsburgh Station.

OLD TESTS ARE UNRELIABLE

Reinhardt Thiessen, Research Chemist, Says Scientists of the Past Only Had a Vague Idea of the Composition of Coal.

Washington.—Conceptions of the origin, composition and general nature of coal held by scientists in the past are so different and contradictory that it is a difficult matter to determine the real extent of knowledge available or to rely on the literature, says Reinhardt Thiessen, research chemist of the bureau of mines. Scientists in general had only a vague idea of the composition of coal, the origin of its constituents, the transformation they have undergone, and the conditions they now are in.

The chemist did not have enough fundamental knowledge to attack its chemistry in the right directions. The fuel engineer, in turn, did not have a broad enough chemical basis for studies in combustion, distillation, cooking and other processes relating to the use of coal, hence the efficient utilization of coal in the industries has suffered from the lack of a proper knowledge of the nature of coal itself.

The bureau of mines, in order to clear up some of the confusion that exists and to get a more exact knowledge of the nature of coal in general, as well as to obtain certain fundamental facts, has been conducting at its Pittsburgh station a microscopic study of the structure of coal. One of the great hindrances to its study, from the time of the earliest investigators to the present, has been the difficulty in preparing thin sections for microscopic observation. Many attempts had been made to overcome this difficulty, and also to devise other means of study.

For a number of years the ash method was pursued, bits of coal being either totally or partly burned and the ash examined under the microscope. Later, maceration was tried with some success, but on the whole it failed to reveal the true nature of coal. More recently the method was tried of softening the coal with reagents and then cutting it into thin sections with a microtome. But this changes the coal too much to show its true appearance, besides the method is inexpedient.

Used Rock Method Study.

For the bureau's work an adaptation of the method used successfully for years by petrologists in studying rocks and paleobotanists in studying plants was employed. A small rectangular piece of the coal to be examined was planed and polished on one surface, which was then cemented to a glass slide with a mixture of Canada balsam and marine glue. The piece was ground to a safe thickness on a lapidary's wheel and was finally ground to transparent thinness by hand on a fine hone. Examinations were then made through the microscope at magnifications ranging up to 2,000 diameters.

The bureau says that even with the naked eye a bed of any bituminous coal is readily seen to be banded, and a chunk of coal is seen to be highly laminated and composed of layers varying greatly in thickness and in color, texture and fracture.

There are generally recognized and described two kinds of coal with respect to its texture; compact coal and mineral charcoal or mother-of-coal. In the compact coal, in general, two kinds of bands are recognized, apparently alternating and in sharp contrast. The one is of a bright jet-black, pitchy appearance and breaks with a concholdal smooth, shiny fracture. The other is grayish black, of a dull appearance, and breaks irregularly. The former is generally called "bright coal" or "glanz coal" and the latter "dull coal" or "matt coal." The bright coal consists of lenticular masses greatly varying in thickness and breadth and entirely surrounded by or imbedded in the "dull coal."

From the study at high magnifications it has been definitely shown that the "bright coal" represents constituents that at one time were pieces of wood, as of trunks, stems, branches and roots. They are called "anthraxylon." The "dull coal" is extensively subdaminated into thinner sheets of "bright coal" and "dull coal." These thin sheets of "bright coal" also consist of definite components and are imbedded in a dull granular appearing matter. The "dull coal" may therefore conveniently be divided into two classes—the thin black shiny strips and the highly comminuted material, termed attritus, in which they are imbedded.

Derived From Plants.

It is conclusively shown that the thin strips of bright coal are also derived from woody parts of plants, and are anthraxylon, but represent thinner and smaller fragments than the thicker strips. There is no real distinction between the larger and the smaller or thinner anthraxylon constituents, there being a complete range in intermediate sizes, but the smaller are the more numerous. Some coals are largely made up of the thinner anthraxylon strips.

The attritus is composed of a number of groups or classes of constituents, most of which can be definitely identified and their origin determined. These are the degradation products of cellulose (the essential constituent of cell walls), humic matter, spore exines, resins, remains of cuticles, highly carbonized material rodlets and some mineral matter. All are readily distinguishable in the photomicrographs.

Examination of a number of coals has shown that most of the coal is derived from the woody parts of plants, such as trunks, stems, branches and roots, including all the tissues that make up such parts. Some of this wood is represented by the larger anthraxylon, some by the smaller anthraxylon and some by the attritus. The proportion represented in each of these varies in different coals and even at different levels in the same coal bed. There is evidence that some of the cellulose matter is derived from the more delicate tissues, such as herbaceous plants, young or growing parts of plants, leaf tissues, etc.

The humic or decayed vegetable matter forms a considerable proportion of the attritus of all coals. It is derived from the cellulosic parts of plants, but includes, besides macerated, semi-decayed wood, some macerated gum, bark, pith, cortex and other more delicate parts. There is no sharp dividing line between the anthraxylon and the humic constituents.

Resins are found in all coals, but in greatly varying proportions, both in the anthraxylon and the attritus. When found in the anthraxylon, the resin is found in those tissues where it would be expected if the constituent were still a sound piece of wood. In the attritus the resins are easily distinguished from the other constituents.

Comparing Different Coals.

The exines or outer walls of spores are present in the attritus only and form an important part of all coals, but in greatly varying proportions. The spore exines are the most readily discernible constituents in all coals, and have definite characteristics. Different genera and perhaps different species of exines differ in sculpturing, size, form and thickness of wall, and by means of these characters can readily be distinguished from one another. The spore characters have been so well preserved in almost all coals that the spores of one kind of plants can be clearly distinguished from those of another kind. In some coal seams the larger bulk of the spore exines are of the same kind, in other seams two or three kinds may form the main bulk. In comparing coals from different beds the predominating exines of one seam are easily seen to be different in some way from those of any other bed. Thus the coals of different beds, containing different spores, may readily be distinguished from one another.

Occasionally in a given coal seam a spore exine is found that differs from those of any other seam, but does not predominate. This spore exine may be a distinguishing characteristic of the coal seam in question, although not the predominate one. This fact promises to be of value in the stratigraphic correlation of coal seams. The Pittsburgh seam, for example, contains a small spore exine that is both predominant and characteristic and may thus be easily distinguished from any other.

All ordinary bituminous coals contain certain constituents that are more highly carbonized than the rest of the coal and stand out in sharp contrast to it on account of their opaqueness. In general there are two types of carbonaceous matter—one type shows definite plant structure and consists of the more highly carbonized parts of plant cells or bits of woody tissues or other plant tissues; the other shows no plant structure and is of indefinite origin.

Other constituents that are invariably present in all coals are the so-called rodlets or needles. Many are scattered helter-skelter through the attritus. Sometimes they are present in such large numbers that they form a considerable part of certain thin laminae. Many of the anthraxylon components, and, conspicuously, many of the mineral charcoal constituents, inclose a smaller or larger number of rodlets that are evidently part of their structure. Most of the tissues remaining in the coal with which rodlets are associated are recognized to be those of plants related to the Medullosae, well-known paleozoic plants allied to the cycads. From this it appears that some of the rodlets, if not all, are the semi-petrified contents of the mucilage canals of Medullosa-like plants. In the original plants these canals were elongated intercellular spaces containing gumming substances.

RESCUED FROM REIMS

A French tot from the ruined city of Reims who has been rescued from the shattered streets and debris of his home town, and taken to the fresh-air colony at Villers-Allerand, where he is given sunshine and good food. The colony was established by a Reims schoolteacher for the benefit of delicate children, and she has had many fairy godmothers, including the Junior Red Cross, which has helped with 48,000 francs.