

The French Problem of Reconstruction—IV

Some of the Details of Agricultural and Industrial Reestablishment

By C. H. Claudy, Special Correspondent of the SCIENTIFIC AMERICAN in Paris

IT is typical of rural France that almost invariably the first thing rebuilt is a grange or grain barn. Your typical French farmer doesn't live on his farm, as does his American cousin. French farmers gather in the hundreds of little towns which are so close together in France that one can almost shout from one to another. Their farms are for farming, their towns for living, and while the town, as a town, may not seem so much in American eyes, it represents to the French farmer all that his life holds of gregariousness and social intercourse. So when he begins to rebuild his farm, he thinks first of the typical farm building; when he begins to rebuild his town, then it will be time to think of the dwelling. Meanwhile he lives in his barn or a tent or a dugout or anything which is half a shelter. To aid him in finding such, the government has ordered more than 25,000 demountable wooden houses of a couple or three rooms and an out-building at a cost of less than \$1,000 each, as well as 10,000 demountable farm buildings costing from \$150 to \$800 each.

Alas, once more, here was good effort lost; for several thousand of these were set up and occupied and in the path of the last German drive. But you can't discourage France by burning up a few thousand temporary shelters after what she has suffered. Any nation which can face a Rheims can face anything. People think of Rheims somehow as the city surrounding a destroyed cathedral. The cathedral is undoubtedly the world's most tragic and most wonderful ruin, from an art and a sentimental standpoint; but what of the city in which the cathedral stands? This dead and silent place, these thousands of houses, of walls and fallen stones that once were houses, these multitudes of empty staring spaces that were once homes, these poles on which are no wires, these tramway tracks on which are no cars, these cobbles over which pull no horses, this town which is now no town—and Rheims is but one of many, if the largest.

Wherever possible French troops are being used to supply labor for reconstruction work. It must not be forgotten that Peace is not yet, and be sure France is not forgetting it. But she is also not forgetting that idle troops are troops deteriorating and so General Petain's order to all military units located for several days in any one place to offer their services to the local engineer in charge of reconstruction has resulted in a good deal of otherwise lost effort being directed on the rebuilding problem.

One of the great problems, of course, is the housing and the feeding of the army of workmen who will do the rebuilding. But France has recognized this difficulty and has provided ample funds for both, as well as the spending of those funds, the purchase and the trans-

portation of the temporary quarters, the maintenance of lines of communication with the nearest base of supplies for any district to be "invaded" by reconstruction engineers and laborers. France has not warred with a Hun for four years without learning how to support troops in the field. She now has a special service devoted entirely to the supplying and erecting of barracks wherever needed whether for refugees or for workmen.

France is a country of stone and cement, tile and brick. Wood is little used for building. It is too valuable and, besides, it burns up, and who would build a town which might burn up any time anyone became a little careless with a cigarette, *n'est ce pas?* So the government, through its Technical Service of Reconstruction, is experimenting with various building materials to see how those found in any one spot can best be utilized and has a

men killed or wounded and the rest away under arms.

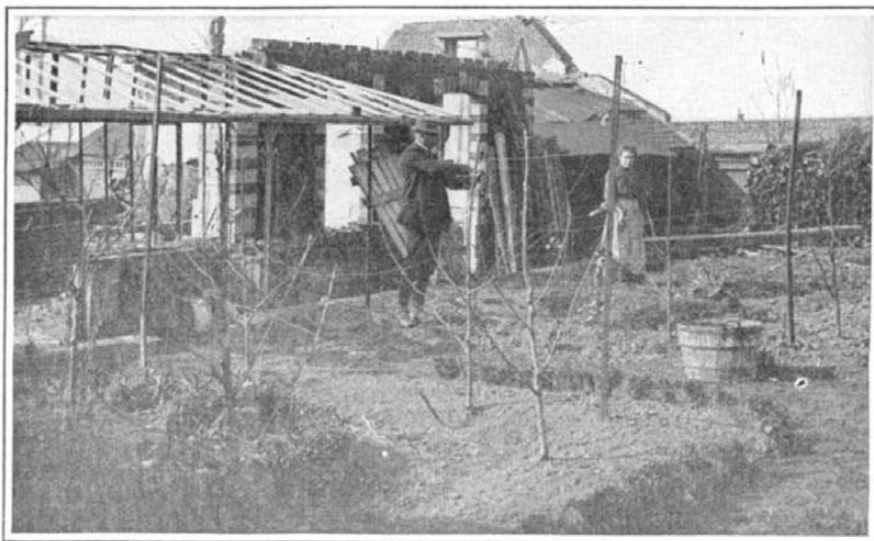
And all the while, those who work must eat. Hence the reestablishment of agriculture is of paramount importance. Here the government helps with its tractor service although the help is short of the requirements. For instance, two years ago a million acres were released from Hun domination of which the half was cultivatable. The French tractors plowed 80,000, the French army 12,000 and the British army plowed 50,000 of these acres. Today the government owns more than 1,500 tractors of which more than half are for use in the devastated regions.

Usually of course, the French farmer does his own plowing. But usually he has his own farm beasts to plow with. What the German's didn't take, his own army did; there are few horses and mules left for rural service in France today. Twelve thousand horses a month were swallowed up in the armies. The result is that where the service of Agricultural Reconstitution is otherwise ready and anxious to put refugees back to work on their farms and to provide them with German prisoner labor, it is often estopped simply because there is no available power with which to plow; and 800 tractors can't do it all! Moreover even if some one were to present a few thousand horses to the people of France he would have to present each horse his food, also; France couldn't feed the animals if she had them. But she can feed tractors and she has ordered many more. Tractors and much farm machinery from America are what is needed. And the need is at least double that of the \$8,000,000 worth contracted for by the French government so far.

Altogether, reestablishing rural France in a productive state seems to be a vicious circle. There must be crops to feed the animals which must be fed to pull the plows, which must function before there can be crops; the crux of the matter of course is labor and that can't be had until the military situation permits. Let no American say: "Oh, devastated France will soon feed itself now it isn't overrun with Germans." Let him rather look with kindly and patient eyes at a whole people who have literally nothing left but their land and not always that, and give them his entire sympathy as they try to get something again to grow where formerly so much grew in so carefully and intensively farmed a way.

With 50 millions of dollars to its credit the Office of Industrial Reconstitution, composed half of officials and half of manufacturers, has gone bravely to work to reestablish the shattered industries of France. How great a task this is can much better be imagined than described. It is not a case of starting up an industry

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Replanting an orchard in the devastated region of France

laboratory in Paris for trying out new ideas of construction, cement mixing, brick making, building, etc. In addition it has carefully mapped France with regard to her quarries and other earth-found materials, so that there may be no useless waste of transportation in getting raw materials to the place at which they are to be used; for transportation is the "neck of the bottle," to use an American expression, in the whole building program.

There is no lack of building material; stone, brick, sand, lime, tile, cement, can be produced and are produced in most of the affected departments. What is needed is machinery and tools and coal—and transportation; and it is these things which the reconstruction authorities are trying to arrange rather than the individual details of materials. But it is a slow process with the country to be worked in a ruin, with the best



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such a great flight. The machines, staunch and powerful as they were, proved delicate in the face of the unusual storms off the Azores. The directional wireless, while of some aid, did not prevent the NC-3 from getting far off the course. The Liberty engines stood the test in good shape on all three planes. All in all, the failure of two NC machines was a matter of navigational difficulties due to fog and storms of extreme severity.

It seems strange that there should be only two seaplanes entered in *The Daily Mail* trans-Atlantic contest, while all other entries are land-type planes. But when the experience of the NC boats is taken into consideration, one arrives at the conclusion that once a machine has to come down on the surface of a running sea, there is little hope of again rising. Hence why bother with a seaplane, with all its additional weight and head resistance? The average airplane, with its tanks emptied in the emergency, will keep afloat for some length of time. So that explains the preponderance of land-type planes in what would seem to be a hydro-airplane contest.

A Shooting University

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it fun to lie on their tummies and shoot now and then at a far-off and tiny square of white, with a still tinier black spot in its center. Mayhap the rifle lover may be enticed over to see why the trap lover thinks it a good time to break a lot of baked mud pies all over the place with a shotgun.

So the great trap shooting organization, the American Trapshooters Association is installing a battery of its traps, and is framing up some big shoots right in the middle of the grounds where the civilian and the "flat-foot," which is Armyese for the sailor, and the militia and regular army teams hold forth with their service rifles. For the first time in history, the same grounds are to see a big clay bird and rifle shoot progressing together.

A complete range is being built where the matches with the small bore rifle, otherwise the humble .22 of the shooting gallery and the small boy, are to be conducted. In the right little, tight little isle of England, where 35,000,000 people make ranges for the military rifle necessarily hard to obtain, hundreds of thousands of the Britisher lovers of the sport, do all their shooting with the little rifle at ranges up to 100 yards. Annually a program of matches for these small bore chaps—not schoolboys nor kids, but full grown and sober-minded men—is pulled off at Bisley in conjunction with the full range matches for the military rifle, and a good lot of prizes are hung up during the two weeks' shoot.

The idea has been transplanted, and the small bore range on the Caldwell grounds is to encourage the movement among the rifle shooters and possible rifle shooters of the country, where even now ranges safe for the military rifle, are becoming difficult to find. The chap skilled with the small rifle, needs but a day or two with the big military arm to become a skilled war shot. The schoolboy will be encouraged to come to Caldwell, nor need anxious mothers have visions of his shooting up or being shot up by others. The tutelage of the skilled blue-jacket instructors, who made expert shots out of thousands of their kind, is to be available to every comer to the Caldwell Navy rifle range.

A hostess house, and a cordial welcome is the contribution for the ladies who feel curious as to whether or not there is anything attractive to the game of burning powder. Every match is to be open to women, and special matches will be framed for them, always with handsome blue jackets to explain why it is a useful health hint not to look down the barrel to see if there is a bullet in it.

The Navy promises the use of a rifle, big or little, free ammunition, and board at the range at the rate of 60 cents per day to the person who wants to attend the shooting university. The general public

is cordially invited to come and look on at all times and provisions are made for spectators. There is of course no charge whatever for admission to the range, and none for the use of the range by the shootively inclined person.

While there will be plenty of sport and sportsmen at the Caldwell range, the primary purpose is not a sporting event, it is educational, possibly even partaking of propaganda. To get the present ignorant or indifferent American interested in shooting and thus make of him one more unit in the fighting strength of the country, is the basic idea of the National Matches as run by the Navy.

The three-miles-square Caldwell range is on the Passaic River, land reclaimed by the energetic Navy men, and it is reached via Hudson Tubes to Newark, thence trolley to Caldwell, and bus to the range.

The range is so wide open to the public that there's not a latch from which to hang the traditional string. During the summer there will be demonstrations by tanks, machine guns, trench mortars and other material, to be announced more definitely through the newspapers.

The French Problem of Reconstruction—IV

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which has been stopped by the war, as in England; it is a case of a new building, new machinery, a new work force, often new customers. There is nothing with which to start in most cases save a name and plenty of courage. As an instance of what is meant, there is, in the very shadow of Rheims' ruined cathedral, a little print shop. It employed, perhaps, before the war, 40 or 50 people. The proprietor could step to the door and see the facade of the cathedral and if he were religiously inclined be inside its portals in 30 seconds' walk. Today there is no roof to the building, and if a second story existed there is nothing in the walls to indicate the fact. Whatever was higher than the door has fallen on on the presses. Three ruined linotype machines are buried to their keyboards in brick and stone. Every wheel is a mass of rust. Any one can have the lot who wants it; an ironmonger wouldn't give a franc for the entire outfit. And this is one of thousands of cases. That printer must get himself a building, presses, linotypes, cases, types, paper, business, workmen, before he can begin to take his place in the industrial establishment again.

This central reconstitution group is only advisory in character and can do no trading according to French law. So it has formed a body which can trade, which goes by the imposing name of the Comptoir Central d'Achats Industriels pour les Regions Envahies. This body has a small fund of a couple of hundred thousand dollars to its credit but can get all it needs up to the resources of the parent advisory body, as fast as that body wills. It functions by buying machinery and stocks and lending them to manufacturers, who may pay for them in cash, at the saving obtained by the large powers and functions of the trading body, or who can have them charged against the eventual indemnity to be received. So far some 12 millions of dollars of purchases have thus been effected and orders for 40 millions more are in a state of preparation, principally for the reconstitution of coal mines, power plants for electric power, machine tools, etc. Textile industries, breweries and sugar mills are now being helped. Another scheme which is working out slowly is the formation of cooperative societies in individual industries. In the steel industry for instance, since all cannot start up at once, the first one or two which can, operate on credit or capital furnished by all, and divide the profits pro rata. Finally the Association keeps all possible track of all skilled labor both in the army and out of it, so that there will be little time lost hunting for the right men when there is the work for them to do.

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How long it will all take only the future can say. There are so many problems all to be tackled at once, and France is not a country nor are the French a people apt to find at once the most efficient and the quickest way. France, perhaps more than England, clings to the old idea. The French are thrifty to the point of absurdity; to the average French mind to throw away is to waste, even if what is thrown away is in itself wasteful to use. Much time is going to be wasted on fruitless attempts to repair and remake what is far better scrapped.

But it is not for the onlooker to criticize. Indeed, after having wandered through these death-like regions and seen the absolute negation of civilization, the complete destruction, and the magnitude of the problem, one is not tempted to criticize. One feels indeed that results would come quicker were there perhaps less fear of the loss of trade which would come by admitting foreign products at once. What France needs is material, tools, and transportation; to keep any of it away with regulation tariff, or import duty is, apparently a mistake. But the French know their own business best, doubtless, and whatever else he has or has not, your apparently ruined French peasant, store-keeper, manufacturer, miner or producer has courage.

In the little town of Belleau, at the foot of the slope which rises to Belleau Wood, just west of Chateau Thierry has come back one lonely inhabitant. Belleau had but a dozen houses and they are now but walls. But the lonely inhabitant is not daunted. With hammer and saw he is industriously patching a piece of a roof for a piece of a house, and he whistles while he works. And that is, after all, the spirit of France today and the answer to all critics who find her reconstruction program somewhat small for the task, and her progress very slow. Whatever her methods, nor how they may be criticised from an American standpoint, she has the stout heart, and in time, and with American machinery, some foreign credit and the lightheartedness which comes from a beaten Hun and Alsace and Lorraine "home" once more, she is sure to conquer in the end and heal her wound, mend her scars and be once more what she has for so many centuries taken such pride in being, La Belle France.

And having seen the hack-saw mark of the Hun across this land and the smile on the face of his victims, having listened both to Paris trying once again to sing and the lonely victim in Belleau town whistling at his hopeless task of remaking a home, one American observer at least is quite, quite willing to lift his hat and cry with all his heart, "Vive la France!"

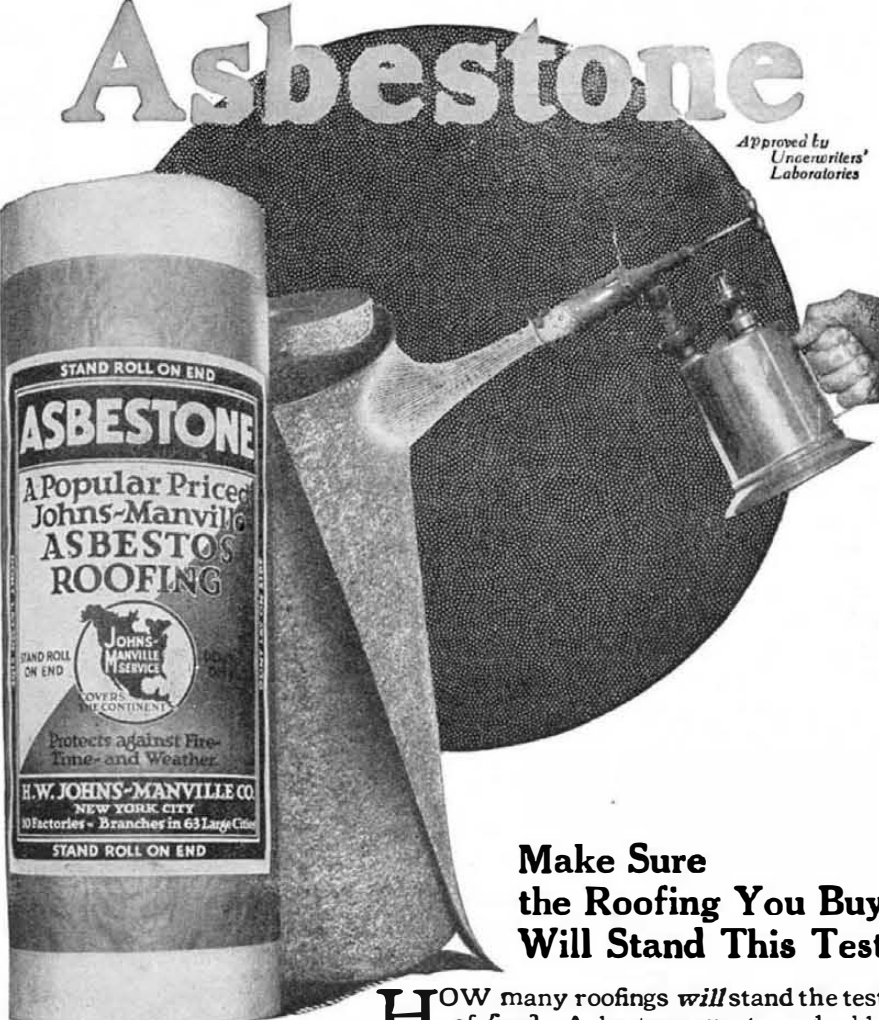
Some Startling Electrical Phenomena with New Form of Vacuum Tube

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nickel, there is an increase in resistance only when the nickel is made positive, but not when it is negative.

It is known that glass at or near its melting point becomes a good conductor. This property of becoming strongly conductive when heated to a semi-fluid state is probably shared by all other so-called dielectrics, but it is obvious that it would be absolutely impossible to operate a vacuum tube at such a temperature. The glass walls of the tube would collapse at about 425 degrees C. The glass will not, however, attain red heat until heated to about 600 degrees C. Electrolytic conduction of glass is observed at far lower temperatures than these. In actual operation the temperature of this electron tube never exceeds 140 degrees C.

The third effect both assists and retards the operation of the detector. It has been found that while conduction is taking place in the glass the products of decomposition are deposited on the electrodes. The second effect is really part of this third effect, it being probably a deposit or an emission of some of the products of de-



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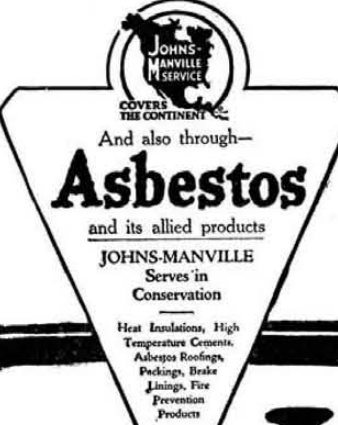
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