

in the pursuit of the sun. A new thing has been done, a new record of determination and of achievement made. There remains now only the formality of traversing the familiar aerial ways of our own continent to write *finis* upon a high adventure. Heroic endeavor takes new forms as the world becomes more and more subdued, but heroic endeavor does not end or deteriorate. While man is man he will strive to do the difficult things which, though they may not be of immediate utilitarian importance, keep humanity jogging upon its upward way.

There have been few more difficult feats than that which our airmen have now about completed. All those dangers of tropic jungle and of frozen tundra known to our old explorers have been faced and conquered. And new dangers that no old adventurer ever knew have been made acquaintance of and overcome. The price of achievement the airmen paid in battered bodies and sometimes in broken hearts. There have been delays greater than could have been anticipated. There have been times when failure loomed. But at length the thing is virtually done, and there are few achievements in our National chronicle of heroic exploits in which we may feel a deeper or a juster pride. The practical fruits of it will be gathered through the future.

Shall We Always Have Coal Smoke?

WHEN coal is burned, a large amount of unburned products go up the chimney and contribute to the great atmospheric pollution of our industrial centers. Those of us who suffer from the general sense of the hopeless uncleanness of things which results should rejoice to learn that we are not the only sufferers. For the products that go up the chimney and are lost are highly valuable constituents of the coal—hydrocarbons built up from water and carbon dioxide by plants and trees that thrived in the carboniferous days of at least fifteen million years ago—and are now being thrown away in immense quantities by a modern world of industry.

But a recent trend of thought which has increasingly realized the extent of this great loss has resulted in a development known as the low-temperature carbonization of coal. If one asks what this is, he might be aptly told that it is the carbonization that is not accomplished by the use of high temperatures. The

latter produces gas, coke, and tar. Low-temperature carbonization, because it does not break down the many intricate molecules of the hydrocarbons produced in nature's laboratory by means of the chlorophyll of plants, which were later destined to become coal, produces a smokeless and solid fuel quite suitable for domestic and industrial purposes; also a small amount of gas, a comparatively large yield of tar, motor fuel oil, and ammonia.

In This Advance Europe is Ahead of Us

THE rather new process described above has not yet found great lodgment in America, a single plant existing in the Ford industries and in one or two other places. In Europe, however, and especially in England, it is rapidly taking hold.

A ton of a suitable grade of soft coal, carbonized in a closed retort at a temperature of about 1,100 degrees Fahrenheit, produces about 1,500 pounds of smokeless fuel, 15 gallons of tar, and about 3 gallons of "motor spirit."

It is anticipated by research chemists that the logical outlet for this new method of avoiding smoke and waste in America will be in its application to those varieties of bituminous coal which refuse to coke. Of these there is a vast quantity available in this country.

For some time past several of the periodicals of the technical press which have connection with the great fuel-consuming industries have devoted considerable space to the discussion of this advance, which, while it would probably result in the saving of their dollars, would also tend to result in the saving of our laundry bills, not to speak of our tempers.

A Bad Beetle

ASPECIES of fly now being cultivated in colonies of from fifty to one hundred thousand larvæ each may prove the solution to the problem of the Japanese beetle, which is now devastating truck patches, farms, lawns, golf courses, and forests over a stretch of 2,500 square miles, covering parts of three States. If it fails, as other insect parasites of the beetle have failed, to thrive in this climate, it probably will be necessary to add parts of at least three additional States to the Federal quarantine area next year and to launch the most intensive and far-reaching cam-

paign in history against the depredations of a "bug."

The Japanese beetle is now in the ninth year of its American invasion. The area of infestation was estimated at less than half a square mile in 1916. Last year it had increased to 700 square miles. Roughly, it has been increasing its area three and a half times a year. If this rate of progress keeps up, it will mean that nearly 9,000 square miles of land will be infested by next summer, and in order to maintain effective quarantine over that area a much larger section of country must be guarded.

Officials and scientists of the Federal Department of Agriculture and of the State Departments in New Jersey, Pennsylvania, and Delaware are waging a year-round war against the beetle, which has been under way for some years. The real fight, however, is only under way during the growing and harvesting seasons, when the roads are alive with trucks carrying tons of fresh produce to market. Last year, with 150 men in the field, the battle waged by the entomologists to prevent the transportation of the beetle or its grubs was a heartbreaking struggle, but it was child's play compared to the conditions now being fought in the three States named.

A Pest Like a Forest Fire

FIGHTING the rapid spread of the Japanese beetle is very much like the fighting of forest fires in States where the service is loosely organized. It is necessary to hire men wherever they can be found, and only exceptionally hardy and loyal men survive. The Bureau of Entomology of the Department of Agriculture in co-operation with each of the infested States is guarding roads in the quarantined area night and day with a force that shifts in number between 300 and 450. It is being so hard pressed by the necessity of guarding even the back roads that nothing short of a catastrophe gives the force any relief. A bridge burned in Pennsylvania a while ago drove traffic to other crossings and simplified the task of inspection.

State police have been sent to the aid of the harassed special inspectors. But the truth is that there are not enough men available to make the quarantine absolute while some growers persist in trying to violate it. The beetle's natural rate of progression is about eight miles a year. A motor truck will carry grubs or full-grown beetles fifty to a hundred

miles or more in a day, and a passenger car much farther. Until complete co-operation of the produce growing and buying public is obtained Federal officials admit that the beetle will continue to spread. Even this year authorities considered extending the quarantine.

Two laboratories for the study of the life habits of the pest are now in operation, one at Holmesburg, Philadelphia, and another, the experimental station, across the Delaware at Riverton, New Jersey. The dextib fly larvæ are being delivered every few weeks to the Riverton plant. The tachinid and tiphia groups, tried in preceding years, have failed so far to make any impression on the beetle population. As matters stand now, it is apparent, officials say, that unless some altogether unexpected discovery is made of a way to stop the beetle the little bronze insect will sweep over the greater part of the country. In some sections climate may stop it. In others the scientists hope to have a counter-infestation on the heels of the beetles within a year or two that eventually will reduce it to endurable numbers. The fly now being bred at River-

ton gives promise of great aid in this direction.

A Gigantic Railway Merger

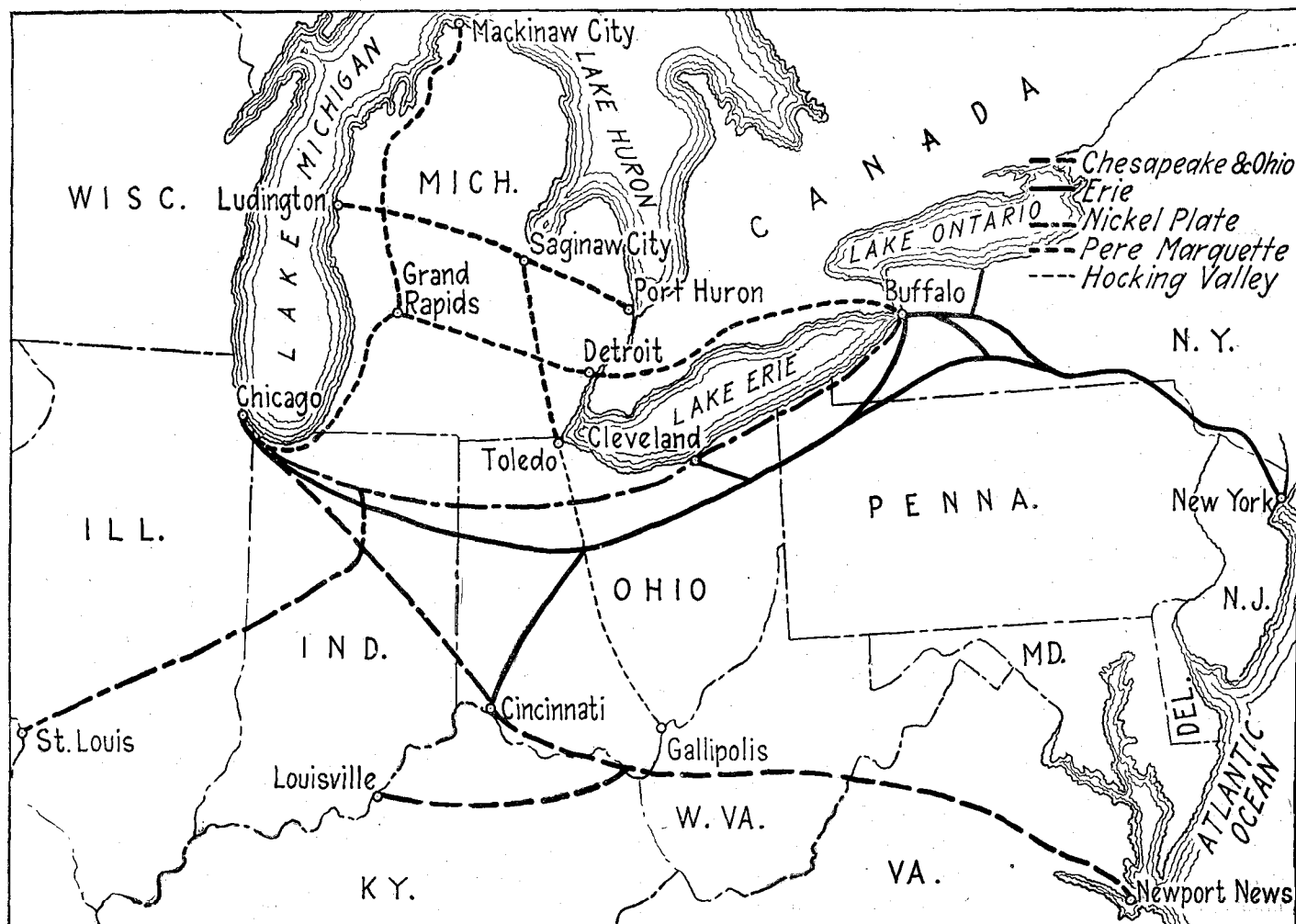
THE most notable event in the development of the Transportation Act of 1920 has just occurred in the merger of five railways—the New York, Chicago, and St. Louis, popularly known as the “Nickel Plate,” the Erie, the Chesapeake and Ohio, the Hocking Valley, and the Pere Marquette. These roads include a total of over fifteen thousand miles of track and represent total assets of more than \$1,500,000,000.

The new system extends from New York, Newport News, and Norfolk on the east to Chicago and St. Louis on the west, including such points as Rochester, Buffalo, Erie, Youngstown, Akron, Cleveland, Sandusky, Toledo, Port Huron, Saginaw, Bay City, Fort Wayne, Indianapolis, Dayton, Louisville, Cincinnati, Charleston, Roanoke, and Richmond. The new system will have the second shortest road between New York and Chicago and the shortest line between Buffalo and Chicago.

Unified control and operation of the

properties will be directed by Messrs. O. P. and M. G. Van Sweringen, real estate and railway leaders of Cleveland, who recently acquired the “Nickel Plate,” consolidating it with the Lake Erie and Western and the Toledo, St. Louis, and Western Railways. Soon afterwards they acquired a controlling interest in other systems.

Stockholders of the five companies are to be invited to deposit their shares for an exchange into stock of the new corporation. No serious obstacle is anticipated, as the directorates of all five companies favor the terms proposed. With this acceptance assured, the Messrs. Van Sweringen will then seek final approval of the merger from the Inter-State Commerce Commission. It is true that the consolidation does not follow the tentative plan of trunk-line mergers at first proposed by the Commission. Perhaps it may object because the consolidation includes competing systems. However, there will still remain the New York Central, the Pennsylvania, and the Baltimore and Ohio systems. It will be remembered that one aim of the Transportation Act of 1920 was to bring about



The network of lines in the proposed rail merger