Is the United States a Permanent Country?

by **MORRIS LLEWELLYN COOKE**

"THE EARTHWORM population of Illinois is falling at a tragic rate!"

This was a distinguished engineer's way of saying that soil erosion prompted by man's careless methods of land use is undermining the very foundation of America's existence. The assertion was made in 1927 before a congressional committee considering appropriations for flood control on the Mississippi River, and it is even truer today than it was then. Any fisherman knows that worms are not found in sand or in soils either desiccated or devoid of humus.

Those occasions when water piles up in the main stems of our large rivers — the Ohio, the Missouri, or the Connecticut, for instance — so that they overflow their banks, are dramatic. The blow strikes suddenly with a minimum of warning. The railroads are paralyzed, homes are devastated, and sometimes lives are lost. The structure of normal living is temporarily shattered. On the other hand, there is nothing spectacular about soil losses — nothing to make headlines. Rather they represent a steady drain which, beginning in the early days of our country, has been greatly accelerated since the turn of the century through easily identified causes. Effectually meeting this threat will require an effort quite out of scale with any the Republic has heretofore been called on to make.

Unless there is a marked change in our present agricultural methods, we have, as a virile nation, perhaps less than 100 years to go. The United States is not a permanent country unless we make it so. It is not permanent in the sense that England and Ireland and Holland are permanent. Why the difference? England has a sod agriculture affording the maximum of protection for her soils, with fairly constant and always gentle rains. In this country we have developed a plowed — and in the case of corn, cotton, and tobacco a cultivated — agriculture, exposing our soils over wide areas to the destructive battering of normally heavy downpours.

When white men first reached these shores the forests covered fully twice their present area, and, except for a small area of desert and waste land, the balance of what is now the continental United States had a protective cover of grass. The dominant type of agriculture first practiced — and this naturally on the more level areas — did no great harm. The products of each farm were consumed on that farm, except for a minimum of localized barter. A large part of each farm was retained in grass; there was a plentiful use of animal manure on the plowed fields; and both rotation and diversification of crops were practiced. The ominous exception was the tobacco culture of the South.

But the struggle for cash crops has progressively changed all this. Single-crop farming — cotton and tobacco in the South and wheat and corn in the West — has removed the tree and grass cover over increasingly large areas and in some sections has led to the use of artificial fertilizers in place of animal manure. Our fast spreading system of farm tenancy affords little incentive for the farmers to care for the soil. To exhaust one farm and move on to the next has been the custom. Increase in the population and the movement of that population westward have led to the utilization of less fertile, more sloping, and therefore more erosible areas. The drainage of swamplands on a wide scale has not only brought poor land into agricultural use but also has frequently ruined adjacent land by lowering the levels of subsurface waters.

One of America's great teachers — Shaler

Woodcut by Thomas W. Nason *Courtesy Weyhe Gallery*

of Harvard — once said of our civilization:

> It is now a question whether human culture, which rests upon the use of the soil, can devise and enforce ways of dealing with the earth which will preserve this source of life so that it may support the men of the ages to come. If this cannot be done we must look forward to the time — remote it may be, yet clearly discernible — when our kind, having wasted its great inheritance, will fade from the earth because of the ruin it has accomplished.

Congressman Maury Maverick in his *A Maverick American* quotes a warning issued in 1818 in South Carolina:

> This system [of agricultural practices], if it may be so called, of perpetual exhaustion, has impoverished our lands to an alarming degree, and if pursued for half a century more, would make this interesting portion of the state a perfect desert . . . and ruined from future recovery by deep washed gullies, etc.

On a recent visit the Congressman found the prediction completely fulfilled. He quotes an ancestor as saying, "The best citizen is the one who fills in the most gullies."

Man-Made Floods

Water in increasing proportions runs off the land instead of sinking into the soil. The faster it runs off, the more damage it does, first in eroding the land and later in overflowing the banks of streams and filling costly reservoirs with the products of erosion. This increase, both in the amount and in the rapidity with which rain and melting snow run off the land, is primarily responsible for the increase in the vehemence of floods and for low water in our streams. Most streams are fed by springs which go dry progressively as the subsurface water levels fall. There has been no change in the weather sufficient to account for the growing extremes in both high and low water.

We are facilitating floods through several types of man-made channels. As a small boy I knew the main road from Gettysburg to Harrisburg in Pennsylvania. During winter and spring there were times when it lay ankle and knee deep in mud and water. That same road has well-maintained ditches, on either side, not only draining the roadbed but quickly carrying the water falling on the roadway and the adjacent fields to nearby streams. We have today 3,000,000 miles of public roads with well-maintained ditches on either side — 6,000,000 miles of drainage trenches standing ready to hurry the raindrop to the sea. Most of these ditches are less than 50 years old.

There are also millions of newly made gullies in every State in the Union — some of them more than 100 feet deep — feeding down to the roadside ditches directly into the streams. Into most gullies lead many smaller gullies. One can easily identify 1,000 gullies on a photograph in my possession of a completely eroded farm in the Piedmont of Alabama. Gullying is a cancerous growth that feeds on itself. Even the depressions between crop rows that run up and down hillside slopes provide gutters down which rainfall rushes into the nearest stream.

Thus natural waterways, from the smallest

streams to the largest rivers, are called on to take care of an enormously increased volume of water speeding from millions of acres of unabsorptive, erosion-exposed subsoil and from hundreds of millions of new tributaries developed as the result of improper land use and the changes man has made in the natural environment. Obviously we are asking our rivers to carry, over occasional short periods, more water than they were created to carry. Rain and water from melting snow, which should be sinking *into* the ground, is rushing *over* it, contributing to erosion and floods, dust storms and disease and poverty.

An especially sinister factor in this situation is that after the topsoil goes — and it takes several hundred years for nature to make *one inch* of topsoil — the unstable subsoil begins to erode and go downstream. Before long you find this unfertile material — water-assorted sand and "raw" clay — blanketing our fertile valley lands. In the recent report of the Great Plains Committee is shown a photograph of a 16-foot-thick section taken in Coon Valley, Wisconsin. The lower 10 feet are obviously of fertile silt, 10,000 years in being deposited. But the upper 5 feet are just as obviously sandy material deposited in the last 60 years — or since eroding forms of agriculture have been established in the area draining into it.

Prodigal America

Almost up to the beginning of the present administration, the term *conservation* was considered all but synonymous with reforestation. The event which first gave national currency to the term — the governors' conference called by President Theodore Roosevelt and held at the White House in December, 1907 — was largely a forestry show, because of the dramatic presentation by Forester Gifford Pinchot and of the further conviction of the then head of the Bureau of Soils of the Department of Agriculture, as follows:

> The soil is the one indestructible, immutable asset that the nation possesses. It is the one resource that can not be exhausted; that can not be used up. As a national asset the soil is safe as a means of feeding mankind for untold ages to come.

But, by the time Franklin D. Roosevelt came to the presidency, the evidence that all was not well with the lands of the United States was too striking to be ignored further. The average yield per acre of our principal grain crops had been declining, notwithstanding improved cultural techniques, advances in crop improvement and animal breeding, and the use of fertilizers and lime. Year by year the acreage of abandoned farms was increasing, as evidenced by the fact that 29 States east of the Mississippi River and 3 States west of it showed marked decreases in farm acreage between 1920 and 1930. Again erosion in its various stages was nearly everywhere visible; and gullying, especially in certain sections of the South and West, had caused complete abandonment and ruin of farms. Further, practically all our streams were carrying an obviously increased load of silt. Three million tons of soil, according to reliable estimates, are stripped by water erosion alone from the fields and pastures of the country every year — the soil equivalent of 1,500,000 acres, or enough to load a train that would encircle the globe 18 times at the equator.

When the Soil Conservation Service was organized in 1933, 100,000,000 acres of agricultural lands had been essentially ruined, in so far as further immediate cultivation is concerned; 100,000,000 more acres had lost most or all of their productive topsoil; and the process of wastage had begun actively on still another 100,000,000 acres. Most of this land could have been saved, had we not developed early in our American life the habit of thinking of our agricultural domain as limitless and inexhaustible or had we not fallen into the extravagant habit of clearing a farm, using it until its vitals had been washed away, and then turning to the once bountiful and seemingly inexhaustible store of virgin land for another farm.

Attention is beginning to be diverted from the soil-erosion situation through the promotion of two important and apparently tenable theses. We are told, in language that lures, first, that a full regimen of synthetic foods — largely chemically derived — is at hand; second, that such foods as are grown will have their roots in pans of water electrically heated and chemically treated. This latter is called "tray" agriculture.

Only a rash person would deny the possibility of radical future changes in methods of growing foodstuffs and in the diet of man and beast. But, if authoritative estimates of the rate at

which soil and water waste are progressing are even measurably accurate, we have less than a generation in which to get these matters under control. Irrespective of what may be accomplished in the laboratory in such a brief period in the way of devising better methods of forcing plant growth, it is hardly possible that such developments will in the near future appreciably affect the grand total of agricultural production. It is frequently possible to affect radically and in a very short time some narrow sector of human activity. But our millions of farmers are individualistic and rooted in old ways. They change slowly.

New and sound ideas as to the utility of synthetic foods are to be expected. But, in view of the many thousands of years during which the digestive systems of man and beast have developed, we can expect only negligible changes in diet in the decades during which the nation is to conquer soil erosion or be conquered by it. Unfortunately the promises of developments in these two fields do tend to create a psychology which diverts us from our urgent task.

We must now face the fact that as a nation we are in the same position as an individual who has been told by the doctor that he has tuberculosis or cancer. We are well along in an earth disease that, unless checked, will be our undoing as certainly as neglected cancer or tuberculosis are the undoing of an individual. Neither individuals nor nations snap out of deadly diseases. But, when the doctor's advice is taken early enough and seriously enough, nations as well as individuals can expect reasonable recovery.

A Practical Program

The Soil Conservation Service early in its drive adopted the co-ordinated or complete land-treatment plan as its method for controlling erosion and conserving more of the water that falls on the land. Since then, the Service has successfully followed the plan throughout the country in a program which now involves more than 500 conservation project areas in 43 States. These projects comprise approximately 18,000,000 acres of privately owned land and 38,000,000 acres of public land and have enlisted the enthusiastic support of 50,000 co-operating farmers. Probably more than 150 different methods of land treatment and gully control are being employed to fit local conditions of soil, topography, climate, and type of agriculture. Among the more outstanding practices are contour cultivation; terracing; strip cropping; rotations; retirement of critically erosible areas to the permanent protection of grass, trees, or shrubs; improvement of farm woodlands; pasture and range improvement; control of gullies; conservation of water in small ponds and reservoirs; water diversion and spreading; and rehabilitation of wild life. Co-operating with this national program, 70,000 members of the Civilian Conservation Corps engaged on soil and water conservation, working on more than 4,000,000 acres located in 38 States, during the last fiscal year planted 112,000,000 trees, collected 2,110,000 pounds of tree seed, and built 2,302,805 check dams and 7,000 miles of fences.

The Department of Agriculture, under the invalidated Agricultural Adjustment Authority act, sought to divert lands producing surplus crops to hay and pasture. Under the substitute legislation, the Department makes grants to farmers who plant soil-conserving crops and follow other water and soil conserving practices. Twenty-two States have already enacted legislation, recommended by the Department, designed to promote conservation. President Roosevelt's plan for dividing the country into seven conservation districts means regional planning for regional problems, wherein upstream engineering, covering the whole field of soil and water conservation, will be co-ordinated with downstream activities.

Although more has been done during the last three years to curb accelerated runoff and erosion than in all our previous history, damage and wastage through the dual process are still spreading faster than control measures are being applied. Even so, on the basis of what has been accomplished, I am convinced that it is possible to get under way a proper land-use program which within 15 or 20 years could be applied to all land urgently needing treatment and that the job could be completed about as effectively as man can hope to complete it within 30 or 40 years. The cost, necessary and wholly worth-while as it is, will be tremendous. But could it be otherwise? Remember that in salvaging the situation we will be paying the bills for a profligacy running back 200 years and more.

In any crisis the first requisite of ultimate victory is a sensing of the difficulties. Here we have to admit that science does not yet know how adequately to safeguard all types of land used for agricultural purposes. We are learning and learning fast, but old techniques must be improved, and new ones are still to be worked out. If the ravages of our soils and the lessening of our water reserves are to be arrested, a vast peacetime army will have to be recruited, and this personnel is yet to be educated and trained. Most difficult of all, millions of landowners and land operators must be convinced that the right to possess and to use land carries with it the obligation to safeguard it, as was provided in the Napoleonic code.

Our attack along these lines must be immediate and energetic, for really serious illness can be successfully attacked only in the early stages. In other words, unless we have this gangrenous growth of soil erosion well in hand within the next 20 to 25 years, efforts made subsequently will have to be heavily discounted, because our certain penalty will be the rise of a whole new series of physical, economic, and social problems that will stand effectually in the path of American progress.

Peacetime Sacrifice

Before it is too late to matter much, the American people must learn the great difference between financial accounting and social accounting. To date, the worth-whileness of practically all our peacetime activities has been judged by the one all-compelling standard of the market place, i.e., whether they pay tangibly in dollars and cents. Such judgments are reached by the techniques of financial accounting, as contrasted with a social accounting which operates on a long-time point of view and has in mind the interest of all of us rather than of a single individual or of a restricted group.

A Texan recently inherited a farm property from his father, who had paid $1 an acre for it at a time when it was capable of producing a bale of cotton to the acre. Notwithstanding the fact that it had deteriorated so that it produced only one eighth of a bale to the acre, it was recently sold for $150 an acre. This transaction appears splendid from the standpoint of financial accounting but not so good when judged by the long-time interests of a free people. If there is one lesson which the depression has taught, it is that what may be good for the individual may be disastrous for society as a whole; conversely, what is good for society will prove in the end to be good for the individual.

It may be sound constitutionally to allow John Doe and Richard Roe to ruin their farms, through failing to practice soil-conserving measures, on the ground that they have title in fee simple. But, if enough people are allowed to act on this theory for just a few more decades, we will not have enough farms to feed us.

Confronted by such a problem as that of conserving the waters and soils of our country, one wonders whether the democracies of the world are calling for enough sacrifices in the pursuit of peacetime activities, as the dictatorships are undoubtedly doing. May it not be that the standards of the market place are insidiously shortening and narrowing our point of view? Democracies give a good account of themselves in war — why not in peace? Why, if it is of good repute to die that one's country may live in security and freedom, should it not be of at least equal repute to live for the same purpose and to sacrifice in so doing? If we are to save our basic resources of soil and water, we individually must sow more than we shall ever reap in our own lifetime!

Only so can we follow Vachel Lindsay's lead in saying:

Come, let us see that all men
Have land to catch the rain,
Have grass to snare the spheres of dew,
And fields spread for the grain.

Only so can the American dream be fulfilled.

In an early issue:
"Survival of the Fittest—for What?"
by Jean Ricochet Boyd

FOOD

The World on a Flabby Diet

by **FORD MADOX FORD**

THE SUBJECT of food is almost never seriously treated. Certainly it is almost never treated by one who has followed food itself from the furrowed fields to the market places, the public feeding establishments, the public stomach, and, above all, the public psychology after its consumption. For a page or two devoted to these topics you can find a daily 100,000 in the world's press given over to the disasters caused by eating improper foods and to the food fads of the moment, whether they emanate from the white-rat-haunted laboratories of stamp-collecting physicians or from pseudoscientific state culinary establishments or are merely the nightmare crazes of individuals inspired by their grandmothers.

But regional industries are responsible for perhaps the most influential of all food movements today.

Thus in a brochure from southern France that I possess you may read that of all vegetables the endive is the most deleterious for humanity, whilst the tomato has all the virtues of the fountain of youth. The endive will not grow in the district where that brochure is circulated, whereas almost the entire population grows tomatoes for the market.

Similarly, round about Arras doctors tell you that the only really salubrious vegetable is the winter-grown endive, which consists of nothing at all but three types of vitamins. The tomato, on the other hand, is the father of all uric-acid complaints. You do not have to be told that the winter-endive crop of north France is worth hundreds of millions of francs and that tomatoes cannot be commercially grown there.

So the medical advisers of the Bordelais will tell the world that a sufficiency of claret per day will keep the doctor away because of the relatively large quantity of beneficent tartaric acid in that fluid, whilst the Burgundian leech will proclaim that Clos Vougeot should be your only drinking. Not to be outdone, the whole medical faculty of hard-liquor–producing States to the west of the Atlantic will write monthly articles for their favorite papers to declare that you should drink nothing but local hard liquor because it contains none of that poison called tartaric acid.

Nor indeed are these pronouncements merely venal: that is what makes the whole matter so confusing. The inhabitants of regions where flourish only the endive, hard liquor, and razorbacked hogs will develop an immunity to them from the constant consumption of those difficult comestibles; but the same foods will poison a visitor from lands where the chief fare is *foie gras*, ortolans, bouillabaisse, and tomatoes.

Most desperate of all is the situation in our