

FORESTS AS LIFE-SAVERS

BY GIFFORD PINCHOT

LATELY CHIEF FORESTER OF THE UNITED STATES

At our request, Mr. Gifford Pinchot has given the following explanation, in simple and plain terms, of the relation of forests to the storage of water and the prevention of floods. Many people believe that the Dayton flood disaster was an unpreventable "act of God." There were even some Government officials who said that the sole cause of the flood was a phenomenal and sudden precipitation of rain, and that it is beyond the power of man to guard against such disasters, because it is beyond the power of man to regulate storms and rainfall. Scientific observers, however (and their number is happily growing) state that the clearing of land and the ditching of fields, in the valleys of Ohio devastated by the flood, suddenly concentrated an enormous flow of water into the brooks, streams, and rivers. Mr. Pinchot's effective description explains how this concentration takes place. He also makes it clear that flood prevention by natural and artificial water storage must be the work of the National Government, and not of the separate States. A watershed which is capable of producing a dangerous flood may lie in two States, and it is obvious that no single State can prevent a neighboring State from being neglectful. We hope that the people of Ohio, and especially the people of Dayton, will not allow the country to forget the chief lesson of the recent floods—the lesson of flood prevention, and therefore of life-saving, by proper forestation and stream control.—THE EDITORS.

YOU have asked me to write you how the forest affects the flow of streams, and I am very glad indeed to do so.

First of all, it is well to understand that seven years' rainfall, more or less, is stored in the first hundred feet of the earth's surface, so that the earth itself is the greatest of all water reservoirs. The streams are supplied (except in times of flood) mainly from this great body of water which the soil and the rocks contain. It is this reservoir that feeds the springs.

To this great storehouse of water the forest holds the key. When the leaves and litter from the trees fall and decay, they keep the surface moist and permeable. Then the fallen rain sinks easily into the great reservoir of the soil, to seep out later through the flanks of the mountains into the headwaters of the streams. Thus there is less water in the brooks and rivers in flood time, and more in time of drought, than there would be if the forest were gone.

But when the forest has been cut off, when the surface has been burned over and has dried out, as it sometimes does, into a cover almost as waterproof as a roof, then the fallen rain cannot penetrate into the soil, but rushes in great volume down the slopes into the streams, and often produces terrible floods, such as cost this country more than a hundred million dollars every year.

This is one of the ways in which the forest affects streamflow, but not the only one. You may easily make proof of another way

in which the forest acts upon the fallen rain. You will need a little table, a glass of water, and a piece of blotting-paper. Tilt the table so that its surface is steep like the side of a hill. Then pour a few drops from the glass of water on the tilted surface of the table. The water has hardly touched the table before it runs off. Then lay the piece of blotting-paper on the tilted table, and let the drops of water fall on that. Instead of running off they sink in; and if the table under the blotting-paper were permeable, part of the water would sink into that, too. If you keep on pouring long enough, the fallen water will begin to seep out slowly from the lower edge of the blotting-paper. So the forest floor absorbs the fallen rain, offers a mechanical resistance to the swift passage of the water into the streams, and lets what water the earth does not absorb work its way gradually down to the lower levels and into the watercourses.

A long controversy has raged between those who, like the army engineers and the late Chief of the Weather Bureau, hold that the forests have no influence on streamflow, and the foresters who, because they know the woods and the mountains, have long known (even if, until recently, they could prove it only by observation and not by actual figures) that the forest has a powerful effect on the distribution of the fallen rain. Now we know from definite measurements made by the Forest Service in California, and from the recent remarkable series of measurements of

the United States Geological Survey made on Burnt Creek in New Hampshire, that forests actually do affect the distribution of the rain, and how much they do affect it. The Burnt Creek experiments show, in brief, that a rain-storm runs off twice as fast from a deforested burned watershed as it does from another watershed, like it in rock, soil, and slope, but covered with forest. These meas-

urements, supported as they are by other similar measurements made with similar results in European countries, have settled beyond the possibility of contradiction one great fact known to all foresters for many years—that the forests help control the flow of streams, and keep floods lower and low water higher than where the forests have been destroyed.

BASEBALL AND THE NATIONAL LIFE

BY H. ADDINGTON BRUCE

ON July 20, 1858, there was played the first recorded game of baseball to which an admission fee was charged. The opposing teams were made up of carefully selected players representing New York and Brooklyn; the scene of the game was the old Fashion Race Course on Long Island; and some fifteen hundred people paid \$750 to see New York win by four runs.

October 16, 1912, or little more than fifty years later, another New York team, playing in Boston, lost by a single run the last of a series of inter-league games for the title of "World's Champions." The newspapers of the country reported the game in the most minute detail, and incidentally announced that the eight games of the series had been attended by more than 250,000 persons, whose admission fees aggregated \$490,833, or an average in excess of 30,000 spectators and average receipts of about \$60,000 per game. Than these contrasting figures nothing could exhibit more impressively the tremendous growth in popularity of baseball in the comparatively short interval between the earliest and the latest championship game.

When, in the late summer of last year, the Boston "Red Sox" returned from a Western tour which virtually assured to them the championship of the American League, it has been estimated that nearly 100,000 people assembled in the streets of Boston to give them a welcome home. And later, when they played the New York "Giants" in the "World's Series," the course of every game was followed with the most eager attention not alone by the thousands in grand stand and "bleachers," but by many, many thousands more standing in compact masses

before the bulletin boards of city newspapers, or in little groups at the telegraph offices of remote and isolated villages. So widespread, in fact, was the interest that the day after the deciding game the newspapers were able to print this astonishing item of news from Washington:

Unprecedented procedure was permitted today in the Supreme Court of the United States, when the Justices, sitting on the bench hearing the Government's argument in the "bath-tub trust" case, received bulletins, inning by inning, of the "World's Championship" baseball game in Boston. The progress of the playing was closely watched by the members of the highest court in the land, especially by Associate Justice Day, who had requested the baseball bulletins during the luncheon recess from 2 to 2:30 P.M. The little slips giving the progress of the play went to him not only during the luncheon recess, but when the Court resumed its sitting. They were passed along the bench from Justice to Justice.

Veritably baseball is something more than the great American game—it is an American institution having a significant place in the life of the people, and consequently worthy of close and careful analysis.

Fully to grasp its significance, however, it is necessary to study it, in the first place, as merely a game, and seek to determine wherein lie its peculiar qualities of fascination. As a game, as something that is "playable," it of course must serve the ordinary ends of play. These, according to the best authorities on the physiology and psychology of play, are threefold: the expenditure of surplus nervous energy in a way that will not be harmful to the organism, but, on the contrary, will give needed exercise to growing muscles; the development of traits and abilities that will