1-1-1916

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Progress of Land Classification in the National Forests

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The growth of the National Forests in the public land states of the west was largely a spasmodic mushroom growth. The first Forests were created under the authority of the Act of 1891, which provided merely for reservation without administration. A sudden increase in these areas, through Presidential proclamation, was at first set aside by Congress but resulted in the passage of the Act of June 4, 1897, which provided for the administration and protection of the areas reserved. The great body of timber land under Government ownership today was withdrawn during the ten years following the passage of that Act, the National Forest area, inclusive of Alaska, reaching its maximum April 20, 1910, with a total of 167,710,956 acres, gross.

This vast acreage represented approximately 160 Forests which had been carved out of the public domain with a full free hand. Many of the earlier Forests created in the Northwest were established without field examination. These, however, did not represent in the aggregate more than about 30,000,000 acres, and embraced the first Forest reserves created under the administration of the General Land Office of the Department of the Interior. Afterwards all areas were examined in the field by officers from the Bureau of Forestry, then in the Department of Agriculture, and, excepting for the work of boundary examinations at that time, in no way connected with the administration of the Government’s Forests. The work was done quickly. The examiners were young, energetic, honest, and thorough. What they lacked in field experience they made up in enthusiasm and earnestness. Each examiner was expected to cover about a township a day while in the field, and for several years these boundarymen waged a strenuous campaign of cruising and exploration, having for
its object the control and ownership of the Nation's forests. On the other side, was a large number of lumbermen, with their cruisers and dummy entrymen, who were seeking to secure timber to furnish a future supply of lumber for the future big sawmills of the Northwest. In other places big cattlemen employed dummy entrymen in order to secure ownership and control of timber, water, and range. The matter was terminated by the issuance of a series of proclamations March 1-4, 1907, inclusive, at which time approximately 17,000,000 acres of the most valuable timberland in the Northwest was added to the National Forests.

This boundary work was the first rude attempt at classifying public lands for National Forest purposes. It was followed by the Forest Homestead Act, which was passed June 11, 1906, and provided for the listing and opening to homestead entry of all lands within the exterior boundaries of the National Forests found to be chiefly valuable for agriculture. This law authorized and empowered the Secretary of Agriculture, upon application or otherwise, to examine and list with the Department of the Interior for homestead entry in tracts not exceeding 160 acres in area and not more than one mile in length, lands in the National Forests which in his opinion are chiefly valuable for agriculture and not needed for public purposes, and the listing of which will not injure the National Forest interests.

This law was a boon to the mountaineer of the west, in that it provided a means whereby land might be filed upon and patent secured in advance of the extension of the regular public land surveys. It had another feature particularly adapted to rough, mountain regions in that it provided for metes and bounds surveys, thereby making it possible to secure the good land, where conformity to 40 acre legal subdivisions might throw considerable poor, rough land into the 160 acre total.

The first applicants under the Forest Homestead law were usually "squatters", or settlers who had taken up land before the forests had been set aside for public use. These naturally divided themselves into two classes: (1) Those who had settled for farm purposes; (2) Those who were after the timber. They were at the two extremes. The agriculturist had the best farm land in the Forest, since he was early on the ground
A ranch established under the Forest Homestead Act on the Payette River in Western Idaho. The homesteader is living in a tent during the construction of a log house. It is 30 miles from the railroad.

A ranch situated in central Idaho near the mouth of a creek emptying into the Salmon River. It is about 75 miles from a railroad and was established under the Forest Homestead Act.
and took his pick. It was easy to handle his case, for his land was really farm land. The timber speculator had the most valuable tract of timber, for the same reason, because he had his pick. His land could not be classified as "chiefly valuable for agriculture", and he has consequently remained dissatisfied with the workings of the law.

The applications from outsiders have, in the main, been from people who were honest in their desire for farm land. For a time the belief was cherished that this represented a form of timber homestead, another opportunity to get a stake at Uncle Sam's expense, but that misapprehension was soon disposed of, and only in exceptional cases are heavily timbered lands now applied for.

The classification of land which has been done by the Forest Service in carrying out the provisions of the Forest Homestead Act has been exceedingly interesting because of its infinite variety and the elements of human interest which it involves. Every forest has been searched from foothill to timberline for areas suitable for farm purposes. Up to June 30, 1915, the last date for which total figures are available, a total of 18,010 individual tracts, involving a grand total of 1,907,608 acres, had been listed by this procedure and made available for agricultural use. These special areas may be considered "hand picked", and represent the cream of possible farm lands in the National Forests. During the fiscal year ending as above 2,336 individual areas were listed, involving a total of 238,525 acres. On a great many forests it is becoming apparent that the limit of land at all fitted for agriculture has been reached, and that there will soon be a falling off in the number of areas listed annually.

Reaching the limit of available land on many of the forests will have little present influence on the advance of agricultural development. This is due to the fact that upon many of the National Forests listing has been in excess of actual demand for settlement. The result has been that although the land has been listed it has not always been filed upon, and still less frequently has filing been followed by improvement and cultivation.
When the land has been listed but not filed upon there is some chance for real public service by bringing the land and real home-builders together. The records in each Supervisor's office are open to the public, and these records show what land has not been listed. Similarly, the records in the local land office are available and show, what land has not been filed upon. Inquiries addressed to Washington can not bring results for the reasons that filings may be made in the local land office at any time, and advice concerning available lands, which may be accurate today may be in error tomorrow. It is, therefore, almost a foregone conclusion that any land which is open to settlement will be secured by local people, if at all desirable.

Following the classification work thus done by the piecemeal examination of area applied for under the Forest Homestead Act, the Forest Service, in 1909, undertook a wholesale overhauling of the National Forest boundaries for the purpose of determining what areas had in the great haste of boundary examination been improperly included within the forest, and should therefore be eliminated, and also what areas were omitted which should properly be added. The work begun in the spring of 1909 is not yet completed, and probably will not be for several years to come. This is due, first, to the magnitude of the area requiring examination; second, to the manifold difficulties of the task; third, to the great care necessary to give all interests due consideration for the purpose of invariably taking uniform action under uniform conditions.

As a result of this boundary campaign the gross area of the National Forests, inclusive of Alaska, and not including the purchase areas in the Appalachians, was reduced by January 1, 1916, to a gross total of 156,446,486 acres, a total net reduction of 11,264,470 acres from the high tide total of April 30, 1910. This gross total, however, includes over twenty-one million acres of alienated land, the actual net area of National Forests of the United States, exclusive of Alaska and the Appalachian purchases of the East, being reduced at this time to 135,389,328 acres. As a matter of fact, the total area eliminated has been much greater than this figure, which represents the total decrease over and above two additions made by a
Part of an area included in a National Forest for protective purposes, located on the northern border of Nevada. The cabin is a sheep herder's abandoned camping place.
special Act of Congress and a number of additional areas added by Presidential proclamation.

The work of the boundary examination, which is in reality one form of land classification, has undergone a very great change during the last three or four years. The Act of August 10, 1912, appropriating funds for the Department of Agriculture, carried for the first time, among its other provisions, a fund for the classification and segregation of land in the National Forests chiefly valuable for agricultural purposes. Successive appropriation Acts increased this fund until it is now uniformly one hundred thousand dollars a year. This money is being expended for the purpose of making available for farm use lands in the National Forests which are found to be suitable and chiefly valuable for that purpose. The work which was inaugurated under this Act is of a more permanent and final nature than the classification work carried on by the boundary and settlement examinations already described. Necessarily, boundary work can not deal with small interior areas. Examinations based upon the applications of individual land seekers must necessarily be widely scattered. But the work of classification under the special appropriation for that purpose has been thorough and systematic. Attention was given first to projects which are most likely to yield a considerable percentage of land suitable for farm purposes, but when a project was once begun, ordinarily it was continued until the entire area was covered, in order that there might be no necessity of going over the area again in the future.

The land classification work as now carried on within existing National Forests is conducted in two operations, one supplemental to the other. The preliminary stage is known as "extensive" classification work. In reality this is a classification reconnaissance. It covers in a broad way, usually by units of approximately a township in area, the lands which are very apparently not chiefly valuable for agriculture. While the so-called "extensive" classification work does not deal intimately with the various factors affecting each area in such a unit report, it does deal conclusively with the non-listable character of that land, for the reason that such reports do not attempt to pass upon the final classification of any areas which are at
all doubtful in character. If a given area appears to present any agricultural characteristics sufficient to warrant a home­seeker in giving it serious consideration for homestead pur­poses, it is left for the more detailed study and closer scrutiny, such as is given to all land classified by the “intensive” method.

Up to January 1, 1916, a total of about 56,000,000 acres of land within National Forests had been covered by such so-called “extensive” reports, and the classification had been approved by the Secretary of Agriculture. This work resulted in about 6,000,000 acres of land being eliminated from the Na­tional Forests. About 45,000,000 acres were classified as non-agricultural and non-listable under the Forest Homestead Act. The remaining 5,000,000 acres were patented lands, or lands otherwise alienated, and were therefore not affected by the classification or included in it. The reconnaissance classification has worked both ways. It has resulted in retaining within forests, under a specific non-listable classification, all areas most clearly chiefly valuable for that purpose. It has also brought out very clearly the location of the areas of doubtful forest value or possible agricultural value. When a forest has once been entirely covered by such reconnaissance or extensive classification, the areas of doubtful forest value or of probable agricultural value are all definitely and accurately determined. In a great many instances the result has been to clearly demon­strate that the only serious objection against retaining practi­cally the entire area for National Forest purposes is the fact that certain errors have been made in running the boundary lines, whereby limited areas of land unsuited for forest pur­poses, or desirable for farm purposes, have been improperly in­cluded. In a number of instances such reconnaissance classifi­cation has been followed by boundary readjustments excluding the agricultural land and leaving only a few areas within the forest of possible value for homestead use. Such areas are then carefully examined and classified accordingly.

The classification problem, however, is not always so easily solved. In some instances, such as the Harney and Black Hills National Forests in South Dakota, it will be necessary to cover practically the entire forest with timber and soil survey, ac­curate in details down to each 2½ acre subdivision. Such work
Head of Six Mile Canyon, Manti National Forest, central Utah, elevation 10,000 feet. This tract was included within a National Forest for protective purposes. The notable erosion shown by this picture is due in large part to unregulated grazing by sheep and cattle. A mountainous watershed in this condition is very liable to send destructive floods to the agricultural valley below.
PROGRESS OF LAND CLASSIFICATION IN NAT'L FORESTS

is painstaking and expensive, but up to December 31, 1915, a total of 450,000 acres had been covered in South Dakota by this method.

Usually, however, reconnaissance examinations, and the boundary revisions which are based upon such examinations, have resulted in a permanent classification of over 90 per cent of the area in each National Forest. The classification has in many cases been governed by some one controlling factor. For example, it is not necessary to secure an accurate timber cruise of a township located at such an altitude that the weather reports show killing frosts every month in the year. Obviously, such land could not be used for farm purposes even if the stand of timber should be found to be very light. Again, it is unnecessary to consider questions of timber valuations when dealing with a tract of land having a topography utterly unfitted for farm purposes. By taking such facts into consideration it has been possible to carry on the work with great rapidity and at a low average cost. While some of the classification work done by the most intensive methods has cost as high as 10 cents an acre for the area covered, the average classification cost has been less than half a cent per acre.

The field work has already been finished on over one hundred million acres of National Forest land, but the mere mechanical labor of typewriting reports, and preparing and duplicating maps to cover such a vast area is in itself a stupendous task, and work now under way will not be put in final shape for official action before the close of another year. Meanwhile, however, the Forest Service, already has located very definitely practically all the areas of land of any considerable acreage having any material or prospective value for agricultural purposes, and by January 1, 1917, will have completed most of the reconnaissance classification surveys and will have accurate figures showing the total acreage remaining for final classification.

In the progress of this work the Forest Service has learned many things. The study of farm values in their relation to land in each National Forest and the investigations which have been made to determine the ultimate highest use of each tract of land in the existing National Forests, has brought out the
importance of taking into consideration the influence of local economic factors. The ancient expression that "what is one man's meat is another man's poison" has its truthful parallel in classification work in what is one country's forest is another country's farm.

In one locality where market conditions are unusually favorable as the result of a certain combination of conditions—as in the vicinity of Telluride, Colorado, where a large mining town is located at some distance from any important agricultural districts, and into which horse feed and dairy products can be shipped only upon payment of a heavy freight rate—aspen land at an altitude of 8,500 feet may be chiefly valuable for agriculture. Because of such unusual market conditions, which conditions appear to be as permanent as the mining camp itself, it may actually pay to clear such land of its timber and put it to such agricultural use. Even though the only crop it is practicable to raise is a crop of grain hay, the barrier of mountain gives such an advantage over outside produce that the price received offsets the disadvantages of soil, topography, and climate. And yet, less than 200 miles away exactly the same kind of land may be very valuable for its timber and for watershed protection and utterly valueless for farm purposes. Its location upon an important watershed, where water is of great value for irrigation purposes, and its nearness to a large agricultural region where great areas of alfalfa land are producing several crops a year, and where, in consequence, farm produce brings only an average price, while lumber, posts, and fencing are in great demand, so influences permanent values as to absolutely control the classification.

Because economic conditions differ as widely in the different States as topographical and other physical conditions, it has been found necessary to work out the problem in each region independently, taking into consideration the general factor of interdependence, which constitutes the economic sympathetic nervous system of the Nation. In the Black Hills region it is found that there is very little timber land suited for farm purposes or which, if cleared, would yield an agricultural return sufficient to justify the destruction of the forest, and that the local public understands this fact as clearly as it is understood
A site too rough to be used for agriculture included within a National Forest in Oregon. This tract was applied for as a homestead. The application was refused on the ground that lands of this character are too steep and rough for farming purposes.
by the Forest Service. On the other hand, in parts of Arizona and New Mexico, where there are vast areas of grazing land and but little hay land, the clearing of timber land even in a relatively non-timbered region may be good economics if water for irrigation is available and the hay produced on the area has a special value as a form of livestock insurance, being accumulated from year to year during the good years and kept to carry through the occasional bad winter a large herd of cattle that ordinarily run on the range satisfactorily the year long. But the timber land that may justify an agricultural classification under irrigation may be valuable only for its timber if water for irrigation is not available. In the first instance it may represent an annual production of 4 to 8 tons of alfalfa per acre, while on a dry farm basis it may represent an annual production of from half a ton to a ton of grain hay per acre, a return so scanty in comparison with the labor and expense of cultivation, seed, etc., that it is undertaken only where the crop has unusual value on account of its location and the land does not require any expensive preparation such as clearing.

In this way it has been necessary in every region to make a thorough study of the fundamentals of farm and forest economics peculiar to the region preliminary to the actual approval of any classification. Based upon such study, certain broad rules have been formulated as a general guide to be observed in that region. Perhaps the best known example of such a rule was the rule put into effect on certain lands along the Kootenai River in Montana, where under given conditions National Forest land was classified as chiefly valuable for agriculture and opened to settlement under the Forest Homestead Act if it did not carry a stand to exceed 4,000 feet B. M. of merchantable saw timber per acre. This rule was merely the concrete expression of the result of a very careful study of economic conditions in that particular region which showed such a relation existing between farm and forest values that in this given region land having certain characteristics of soil, climate, topography, and accessibility, would usually be developed for agricultural purposes if it had less than 4,000 feet B. M. of merchantable saw timber per acre, while if it had more than that amount the odds were in favor of it being held
for its timber value. This rule was given publicity out of all proportion to the region of its applicability, and it took some time to give equally widespread vogue to the fact that this rule applied only where all the physical and economic factors were the same as in the special region for which it was intended. Since then rules have been worked out for other regions; sometimes fixing the minimum of farm value which in a given region justifies cutting into a forest unit; sometimes naming the altitude in a given region above which, with a given slope and exposure, agricultural success cannot be expected; sometimes, for a given soil and precipitation, giving the maximum slope on which permanent agricultural success may reasonably be expected and beyond which the clearing of the slope will probably result in a gullied hillside of little value for either forest or farm. In short, all rules have been restricted in their application to a limited region within which the relation of the determining economic factors are found to be fairly constant. Yet, even with this restriction, it has been found necessary to provide for exceptions to take care of any special cases where some economic factor, because of some special condition, has changed the equation for a particular tract. Economic principles have been given precedence over all rules. In fact, each rule has been only the expression of the application of economic principles under certain fixed conditions. Therefore, whenever a rule is found to be inapplicable, the policy has been to fall back upon the original economic principle and be governed accordingly. In this way it has been possible to make rapid progress and to be both consistent and just.

The classification study and work of the Forest Service is constantly bringing out more and more clearly the importance of community influence as a factor in agricultural development. Probably no other economic factor has greater power in determining the future and highest use of land than the fact of the necessary relation of the land to the development of community life. Pioneering played such a large and necessary part in the development of our Nation that we have not always viewed it with the right perspective. The first settlements in every community have necessarily encountered pioneer conditions. Therefore, when a homesteader goes back into some re-
A site which has been listed as agricultural land on the Boise National Forest, Idaho. Not a very extensive farm, but the owners want it and seem to be able to make a living. Altitude 8,000 feet. The snowfall covers the fences here in winter.

This land is heavily timbered, but is a level tract along the river bottom and suitable for agriculture. It has been listed as agricultural land and is located in central Idaho, Boise National Forest.
mote gulch where he has found perhaps 100 acres that could be farmed if cleared of its timber, he has been inclined to think that, although the place may be ten miles from the nearest house, he is no worse off in that respect than his father or grandfather was when he settled on river bottom land along the Missouri. He overlooks the fact that his father's or grandfather's place was surrounded by equally suitable farm land extending for miles in practically every direction, so that the isolation of pioneer life was only an incident of his younger manhood, and that settlement followed rapidly, resulting in community development and the establishment of the community institutions which are usually incident to civilized life, such as roads, schools, churches, physicians, newspapers, mercantile establishments, etc. Such community development cannot follow the settler into the hills, because no power can push back the mountains no matter how desirable it may be to replace them with farms. Consequently the landseeker is at last beginning to realize that in anticipating pioneer conditions the most important consideration is whether those conditions are probably only transitory or whether topography makes them permanent. A full realization of the importance of community institutions and their influence on farm values has resulted in very much liberalizing the application of classification principles as applied to land adjacent to or intermingled with established growing rural communities. It is realized that such land may be very desirable for individual use in connection with established farms, although land exactly similar in character, situated at a distance from farm development, and not intermingled with more valuable farming land, may be practically valueless for farm use. The proper appreciation of the importance of community influence has, in consequence, resulted in the elimination of many small areas of National Forest land having relatively low value for either farm or forest purposes, but so located that their logical highest use was use under private ownership in connection with other farming activities. Conversely, it has resulted in retaining for forest purposes small patches of land topographically suited for farm purposes, but so located as to be of no real economic value for that purpose on account of permanent isolation, while at the same
time of real value for forest purposes on account of the inter-
dependence of other parts of a large and important forest unit.

The question arises, when will this work of National Forest
land classification be completed? The answer is hard to give.
The total area will be covered in a very few years, but there
will be occasional re-examinations to make from time to time.
Even in older countries, where forestry and agriculture have
been established for centuries, the work is still going on. In
some places one-time farm land is being planted to forests,
while parts of the forests are being cleared for farms, these
changes representing the results of experience and not the va-
garies of a shifting policy. So may we also expect to do in
the future.

The sophomore forestry students of Iowa State College, accom-
panied by three members of the faculty, will make a 4000-mile
trip this summer to study at first hand lumbering methods, re-
forestation, marketing, fire protection, and other forestry opera-
tions. A camp lasting three weeks will be established on the St.
Joe National Forest, Idaho, and four weeks will be spent on the
Columbia National Forest, Washington. Other National For-
est to be visited are the Pike and Holy Cross in Colorado, Uin-
ta, Utah, Plumas and Shasta in California, Snoqualine in
Washington, Lolo and Deerlodge in Montana, and the Nebraska
National Forest. An intensive timber reconnaissance of several
townships will occupy the main part of the work in one of the
camps. The class will leave for the West on June 2 and will
return approximately September 10.

Iowa State College has the largest and oldest extension depart-
ment in the middle west. The addition of a forestry expert and
landscape architect last fall is a step in advance in the develop-
ment of Iowa homesteads. Mr. R. J. Pearse devotes his entire
time to the planning and planting of farmsteads, school grounds
and the development of other public and private properties. The
great aim is to stimulate interest for good forestry and landscape
work in all parts of the state.