

"Eat an' run?" Why not, I like to know? Come on out. Wife 's at the roller-towel now, an' she 'll be here in a minute.

Come on, sonny. Let "dada" tote the clock for you. No? Wants to tote 'er hisself? Well, he shall, too.

But befo' we go out, doc, say that over ag'in, please.

Yas, I understan'. Quick ez he 's took with a spell, you say, th'ow col' water in his face, an' "never min' ef he cries"?

I 'll try it, doctor; but, 'twix' me an' you, I doubt ef anybody on the lot 'll have the cour-

age to douse 'im. Maybe we might call in somebody passin', an' git them to do it. But for the rest,—the bath an' the mustard,—of co'se it shall be did correct. You see, the trouble hez always been thet befo' we could git any physick measured out, he come thoo.

Many 's the time that horse hez been saddled to sen' for you befo' to-day. He thess happened to get out o' sight to-day when sonny seemed to feel the clock in his hands, an' he come thoo 'thout us givin' him anything *but* the clock—an' it external.

Walk out, doctor.

Ruth McEnergy Stuart.

A PLAN TO SAVE THE FORESTS.

FOREST PRESERVATION BY MILITARY CONTROL.

THE following communications were written in response to a request from THE CENTURY for opinions as to the general need of a thorough, scientific, and permanent system of forest management in this country, and specifically as to the plan suggested by Professor Charles S. Sargent of Harvard University, which comprises the following features:

1. Forestry instruction at West Point: the establishment of a chair of forestry at the United States Military Academy, to be supplemented by practical study in the woods and by personal inspection of foreign systems of forestry.

2. An experimental forest reservation: the purchase on the Highlands near West Point, or elsewhere, of a small territory for the use of the proposed new branch of instruction.

3. Control by educated officers: the assignment of the best educated of these officers to the supervision of the forest reservations.

4. The enlistment of a forest guard: a body of local foresters, to be specially enlisted for the purpose of carrying out the principles of forestry thus taught.

EDITOR.

In considering the plan submitted, it must be kept in mind that it is applicable only to the public lands of the Federal Government. In this sense alone can the plan proposed be regarded as national, for by far the larger and more valuable part of our forest area is in the hands of private owners, being proximate to the more densely populated sections of the country, and affecting immediately the climatic conditions and waterflow of large communities. The forest area owned by the Federal Government is principally situated along the slopes of the great mountain ranges of the Continental Divide, the Rockies, the Sierra, and the Coast Range, and its importance lies in preserving conditions that will make future development possible throughout a vast region largely dependent upon irrigation.

Just how much forest the United States owns is not known. It is variously estimated at from fifty to seventy millions of acres: certainly enough to justify careful conservation, considerable expenditures, and intelligent efforts to solve the problem of how best to manage it. Various plans have been proposed, but we have here only to deal with the suggestions of Harvard's eminent dendrologist, Professor Sargent. The first three propositions may be regarded as one branch of his plan, while the fourth distinctly embodies another. In gen-

eral, the proposition to extend a knowledge of forestry anywhere meets with my heartiest approval; but when we reflect that the sole purpose of West Point is to train military men for the nation's defense, and that only those subjects are taught there that tend directly to that purpose, it raises a serious question as to the advisability and practicability of putting upon our embryo officers the burden of a study foreign to their profession.

The present curriculum at West Point leaves no spare moments for the cadets; and certainly, to enable them to acquire any knowledge of forestry that would be of any real value, it would be necessary to extend the present course of instruction for one or two years. In France and in Germany to become an educated forester requires several years' study at schools devoted solely to forestry, combined with practical instruction in the woods.

As to the instruction to be given by means of an experimental forest reservation in the vicinity of West Point, it appears to me that while a knowledge of the botany of trees and various matters appertaining to tree life might thus be obtained, yet no knowledge obtainable as to tree growth in the Hudson River valley would be applicable to the conditions pertaining to the arid regions west of the 100th meridian, where the for-

ests which these officers would be called upon to administer are situated. The forest schools should be located in the vicinity of the forests to be managed. No one in this country yet knows how best to further forest growth in our arid regions. The knowledge is not extant, and will be acquired only after many years of study, observation, and experiment in each section to be administered. Our army officers are too migratory to permit this.

The army can be made very useful, however, as police for the protection of the public forests from fires and depredators, especially during the four months when forest fires are likely to prevail; and such duty accords well with the military organization. It is now the practice of the department commanders to order summer marches throughout the West for the purpose of giving officers and men practical experience; and it could well be changed by making details of commands for the protection of given forest areas, where the troops should be camped for four months to patrol the region assigned. Such work is now being most satisfactorily done at the Yellowstone National Park, and at other national parks, where forest fires are promptly checked, and timber depredations are unknown. Moreover, I am informed by the officers in charge of the troops so detailed that the service is in every way interesting and agreeable to officers and men, strengthening their initiative and discipline, and familiarizing them with the details of a country over which they may some day be called upon to campaign.

In this way the army could aid the corps of civilians in charge of the forests, who should be thoroughly trained foresters; but of this there is no great present need. At this time what is wanted is a common-sense management of this public property, with an organization that can be gradually developed into such forest management as may properly be called forestry.

The most urgent and fundamental need in our forestry movement is to obtain legislative recognition of the fact that the United States owns lands which are valuable only for the tree growth upon them, and accordingly that such growth alone should be disposed of, while the title to the soil should forever remain in the Government for the purpose of insuring such a continuance of that growth as will provide timber for future generations, and maintain favorable climatic and irrigation conditions. Next to this is the creation of a body of forest guards such as is proposed by Professor Sargent. But I do not think that these men should be enlisted. They should include practical woodsmen and young men who had taken a general course in forestry, such as should and might be taught in all of the agricultural colleges of the country. These young men might be admitted to the service after an examination as to their qualifications, and then enter upon their life career, studying practical conditions in their districts, and being promoted as time goes on and their knowledge widens, until at last we should have a real system of national forestry. In no other way can it be attained. For it must be remembered that the life and growth of a forest extend not over one generation, but over many. It is only because this is so that the Government should be the conservator of the forests. The selfish interests of an individual or even of a family lead to the destruction of forests for the sake of immediate gain, to the in-

jury of the public, while the state can consider only the good of all.

This permanent body of men, growing into a knowledge of the public forests, aided from time to time by the army, should in my opinion be the agency created for the management of the public forests, as being more thoroughly and properly taught, having this alone as their profession and career, stationed where their life-work is to be, and subject to no orders or emergencies that would compel their removal from place to place.

Edw. A. Bowers.

[U. S. Assistant Commissioner
of Public Lands.]

WASHINGTON, D. C.

YOU ask my opinion as to "the need of a thorough, scientific, and permanent system of forest management," with a view to accomplishing the preservation of American forests.

Since I suppose that you desire and expect me to answer on the affirmative side, allow me to change the wording of your query so as to make it coincide with my conceptions of the more immediate need — namely, the need of a *common-sense treatment and more careful exploitation of our natural forests*. This appears to me the first need, the first practicable and necessary step, before we can expect anything "thorough, scientific, and permanent," gradually developing as supplies decrease and demands increase.

Common sense in keeping the fires out, common sense in keeping the cattle out of young growths, common sense in using the ax, culling the virgin forest not too severely of the good kinds of timber, and keeping down the undesirable, so that the composition of the forest may not be deteriorated beyond repair for the future — that is what we want first!

We must not forget that a large part of our country is still in the pioneering stage, that economic reforms are accomplished only through gradual development in successive stages, and that the stage we must pass through before "thorough, permanent, and scientific" systems of management can prevail is that in which more careful husbanding of the virgin supplies is practised, and the lessons are learned which lead to that superior application of knowledge and skill. We are only just learning these lessons in agriculture, and we have only begun to consider the necessity of learning them with reference to the use of our forests.

As for the plan suggested with reference to action by the Government, I have only one objection to offer, but it is a fundamental one.

The employment of the army or of army officers in functions for which they were not intended is to my mind wrong in principle. I will grant that such an employment, mainly as guardians of the forest reservations doing police duty, might be expedient for a time to bridge over a period of preparation until a civilian organization can be established; and as such a temporary expedient I have myself, in my reports and elsewhere, advocated the employment of the army. But I should certainly not advocate such an employment of the army as a permanent system. The reference of this matter to the army is a reflection upon the capacity of the civil government, — perhaps not without reason, — and an admission that the present government system is a failure, and the military, strict, and permanent system after all the only reliable one even for civilian functions.

A few lectures on the principles of forestry and forest protection to the officers who might command the forest patrols would certainly not be amiss. As to how the education of foresters for the Government's service or for any forestry service in this country should proceed, I have my own views.

I may only add that even if the Government should reserve all its remaining timber-lands and place them under some kind of rational control,—and we are striving and hoping to have such a policy carried out because it lies within possibility of immediate accomplishment,—yet the question of forest preservation would thereby not be solved or brought so very much nearer solution, whatever beneficial effects upon the final solution it might bring; for the Government owns in all hardly ten per cent. of the forest area, and that situated in the far West, away from the 60,000,000 of people who constitute the bulk of our population, and who must solve their local forestry problems, be it through state aid guided by wise conception of the providential functions of the Government, or through private interests driven by necessity.

B. E. Fernow.

[Chief of Division of Forestry,
Department of Agriculture.]

WASHINGTON, D. C.

DEBATES about forestry would be carried on less at cross-purposes if the word forestry were less misused. It is correctly applied to the business of producing the raw material which is to be manufactured into the merchandise that we call lumber. Using the word in this sense, I have had to do with the planting of more than a million forest trees for other purposes than that of forestry. Again using the word in this sense, it is to be said that there are no mature works of forestry in the United States. There are numbers in Europe that are centuries old. Visiting several of these, I have come to realize in some degree my ignorance of forestry. It happens, also, that some American works of forestry have been begun at my suggestion, and that, pending the employment of foresters, I have ventured to direct a little initiatory work upon them. To such inconsiderable weight as, on this account, may be given my opinion, something is to be added in the present discussion because I was once officially asked to examine the Government property at West Point. I found that a part of it was of rugged topography, and not well adapted to be built upon. It appeared to me, and I so reported, that an object-lesson in forestry might here be provided, by little more than casual observation of which, during the four years of their academic course, cadets might be better fitted than they can be under present arrangements to cooperate with such a corps of trained foresters as economy in the management of its public lands must soon compel our Government to employ.

I am still inclined to think that in a satisfactory system of management of our forests, men will be needed who shall have given to a study of forestry more time than our military cadets can spare for the purpose without neglect of studies in which proficiency must be required of them. A military officer ought not to be a Jack-of-all-trades.

Frederick Law Olmsted.

BILTMORE FOREST, N. C., November 1, 1894.

I AM not sure that I fully understand Professor Sargent's plan. If he intends that the future foresters of the United States are to be selected from the best men of a class which has entered the National Academy at West Point with a distinctly military career in view, I think they would hardly take kindly to a plan which promises a slow, limited promotion, and is distinctly civilian in character. Certainly the thoroughness of the course and the high loyalty developed by the West Point curriculum would insure competency and honesty; but would any real interest in the work follow? The addition of a chair of forestry in West Point, under any circumstances, would undoubtedly render young officers better guardians of our national forests; but would it be sufficient? I should prefer to see a distinct forestry school at West Point, with the same high standard of mental, moral, and physical culture that the Military Academy has. I think the plan of enlisting men as a forest guard wise.

As for our State forests, their best management will depend upon the conditions of the commonwealth. For example, New York has her natural timber areas well isolated, as in the Adirondack and Catskill regions. These might, with certain limitations growing out of vested rights, become the absolute property of the commonwealth, to be managed by State officers for the good of the general public.

Such a plan would in my judgment be neither possible nor wise in Pennsylvania, because her natural timber areas are scattered over a large part of the State, and involve extensive railway systems, mining interests, farming lands, and often towns of considerable size. Under such a condition of affairs I should look for the largest good from a system which would induce the landowner to become a cultivator of trees.

Two ways of doing this occur to me. First, to give timber-land a value by reducing taxes upon it to a minimum rate. An objection to this would be that it would confer the greatest benefit upon large landed proprietors, who, in many instances, are not dwellers in the region. This objection lacks weight when fully examined. Another and perhaps a better way of inducing the landowner to become a tree-planter, is by offering a direct bounty on every acre of trees planted and maintained in accordance with specified conditions. This, at first sight, might seem like an enormous load for the taxpayer to carry; for he ultimately is the source of the revenue from which the bounty would be paid. But this objection vanishes when it is remembered that lumbering industries worth probably \$20,000,000 annually to the workers of this State are about to become extinct, but which could have been maintained had a system of bounties been offered in the past, and which might be revived by bounties aggregating much less than the commercial benefits accruing in a few years.

It is fair to assume that under forest care and protection Pennsylvania in fifty years should have standing white pine worth, at present prices, one and a half billion dollars. This timber should be produced on ground capable of producing no other crop advantageously. Its growth would leave the soil in a fertile condition. Failure to produce this, or a similar crop of some other timber, would mean large impoverished areas which would not only produce nothing, but would be a menace to the rest of the commonwealth in periods of

large, sudden rainfall. The one recognized obstacle to realization of this possible crop is the repeated forest fires. They might be estimated as sweeping out, potentially, thirty million dollars from the limits of the State annually. Under such a showing it would appear that wise, conservative statesmanship demands liberal appropriation to maintain an effective fire police, whose duty it shall be to ferret out incendiaries and to organize and direct a working force in suppressing fires.

No system of forestry should be considered unless it provides for the utilization of timber as fast as it is matured.

J. T. Rothrock.

[President of Pennsylvania State Forest Commission.]

WEST CHESTER, PA., October 17, 1894.

I BELIEVE that the preservation and management of American forests should have urgent and immediate attention. This work is the most difficult field of agriculture—if forestry be agriculture; for the study of the growth of trees from germination to old age so far exceeds the limits of human life that man learns the lessons of tree growth rather by tradition and inference,—the study of similar kinds of trees of various ages indicating what the continuous life of one tree might be.

Thus the scientific study of forestry carries with it a requirement as to the length of time for the study, with abstract investigations, which the practical agriculturist or farmer cannot afford to give, even had he length of life sufficient to enable him to study recurring cycles of tree growth as crops raised from the earth. Yet the value of the forest is so great, and the nature of tree growth appears to be so generally understood among observant, educated farmers and foresters, that one cannot but be impressed by the views of such students and experts: these assure us that more knowledge and more skill in forestry will produce results of a most valuable and important, if not surprising, character.

The United States army officers are men whose training, duties, independence of commercial and freedom from political intrigue, together, have kept them from much of the debasement which has invaded modern life. It is rare indeed that an army officer is found who has accepted commissions for his influence, or sold public property, or gone into conspiracy with public plunderers. The discipline of the army also makes it possible to accomplish great results with small means by concentration of energy. For this reason I favor a supervisory control of United States works, in the interior of our country, by the educated officers of West Point with civilian assistants. I do not favor any interference with State work: that is unconstitutional. The United States cannot, and should not, acquire any lands in any State except under special grant of the State legislature for each piece of land desired.

At West Point, however, the United States government possesses a considerable area of rough mountainous land suitable for forestry experiments. I believe it would be wise to make forestry one of the studies at the Military Academy, and that all the United States forest reservations and parks should be placed under the control or direction of army officers.

I would extend this even further; for I believe that our National Guard should have some of the great benefits of discipline which will come from such a forest

management. Permit me, therefore, to renew here what I have hitherto urged, that upon lands adjacent to West Point—upon the east bank of the Hudson at Garrison's—an adjunct or secondary academy be established by the Government for a short course of instruction for officers of the National Guard. Particularly in artillery and engineering practice, such an academy, under control of retired army officers, skilful and experienced men, would be a most useful institution.

Here also the best methods of forestry could be taught and learned. There could be no healthier or kindlier work for the retired army officer, who has probably traversed, examined, and lived amid most of the great forests of our country, or on the treeless plains where forests are needed. I sincerely trust that this adjunct to the West Point Military Academy will be speedily created.

Verplanck Colvin.

ALBANY.

[Superintendent Adirondack Survey.]

It is almost needless to say that this country needs a thoroughly scientific and permanent system of forest management in the interests of the people of to-day, and, above all, in the interests of their children and grandchildren. There is need of this in the East, but the need is greatest in the Rocky Mountain regions, and it is precisely in these regions that the destruction of the forest is most reckless. Many of the people in these imperiled regions are not permanent inhabitants at all; they are mere nomads, with no intention of remaining for any great length of time in the locality where they happen to be for the moment, and with still less idea of seeing their children grow up there. They, of course, care nothing whatever for the future of the country; they destroy the trees and render the land barren, often from sheer brutal carelessness, often for a pecuniary reward which is absolutely trivial in comparison with the damage done; yet their selfish clamor is allowed to stand in the way of a great measure intended to benefit the whole community.

The damage from deforestation is often very severely felt in lands remote from the deforested region. Because of this fact alone the whole matter should be in the hands of the National Government. Professor Sargent's scheme seems to me in its general outlines to be good, and West Point would seem to be the proper place in which to establish the chair of instruction of which he speaks. Without more information I cannot express an opinion as to whether it would be well to try to instruct all the officers in forestry, or merely to have a special corps trained in forestry in addition to other subjects, with the idea of producing a specialized permanent body of foresters. The duties of the ordinary West Point graduate ought always to be mainly military. The specially educated men who intend to enter the profession of forestry would be intrusted with the supervision of the forest reservations. Of course a body of local foresters would have to be enlisted to work under these officers. There should be more than one forest reservation. In the East this might have to be purchased, but in the West there is no such need: Yellowstone National Park, for instance, and the other timber-land reserves, stand ready to hand.

The question of forest preservation is one of utmost moment to the American people, and no effort

should be spared to awaken them to a sense of its importance; for at present they are steeped in a profound ignorance of the matter, and of how it affects the interests of themselves and their children.

WASHINGTON, D. C.

Theodore Roosevelt.

PROFESSOR SARGENT'S otherwise excellent plan appears to me susceptible of enlargement. It involves waiting for the establishment of a forest school and the giving of its course of instruction at least once before the management of the national forests can be undertaken, and it does not provide for the best grade of trained skill. The first of these points gains its importance from the fact that the management of the national forests is the most pressing need and duty of forestry in the United States. The second is more fundamental in character. A course in forestry which is merely an adjunct to a military education must fail to produce the highest efficiency as foresters in the officers who take it. Adequate training in so large a subject can be reached only by prolonged and undivided attention. This fact has been most clearly recognized in the most efficient government forest services. In Prussia the course preliminary to a state position requires six years; in France, five, of which three are preliminary; and in England the candidates for the Indian forest service, who until recently spent two years at the forest school after passing a competitive entrance examination, now spend three. The addition to the proposed plan of a board of professionally trained foresters, acting under the War Department, would, I believe, meet both these difficulties. The forest service would then include three branches, as from the nature of the work it must:

First. The protective staff, consisting of forest guards, and including private soldiers and non-commissioned officers, to whom lessons in forestry might be given at the post schools.

Second. The executive staff, composed of officers to whose course at West Point some instruction in forestry had been added, perhaps in the form of an additional term. They would have direct charge of the reservations, and would be responsible to headquarters for the guards under their orders, and for carrying out the working plans issued by the War Department for each subdivision of the forest.

Third. The administrative staff, a body of trained foresters acting under the Secretary of War, who would determine the general policy of the forest service, prepare the working plans for each executive charge, and inspect and report to headquarters. They would come into effective touch with the executive staff only through the medium of the War Department.

Such a system could be put in operation by Congress at any time. While the army was doing protective work, the first duty of a forest service, a commission of scientifically trained men would study the reservations on the ground, outline general features of policy, recommend legislation, and do the other preliminary work which must precede the introduction of regular forest management. In the mean time a government school of forestry, established at West Point or elsewhere, would be preparing officers for the executive work soon to be required. A longer course, open to civilians, would provide the more thoroughly trained

men demanded by the expanding work of continuous administration.

BILTMORE, N. C.

Gifford Pinchot.

It has given me great pleasure to examine Professor Sargent's admirable project for the preservation of our national forest reservations. The suggestion seems to me to be one which is likely to commend itself to Congress and to be approved by the officers of the army. If adopted, I feel sure that it will guard the reservations in an efficient way.

I base my confidence in the result of the proposed system on a good deal of experience with the work done by our army officers — those of the engineering corps and of the line. The training which our officers receive fits them for executive work such as it is proposed to have them do. They are trusted and respected by our people, and are feared by the folk who need to be intimidated.

I doubt, however, the practicability of giving the proposed instruction in forestry at West Point. The task can be more effectively accomplished, after the men leave the academy, in a school specially adapted to the purpose.

One of the reasons why the plan commends itself to me is that it provides for the employment in time of peace of a considerable force which, in case of public need, could be at once turned to the uses of war.

HARVARD UNIVERSITY.

N. S. Shaler.

I CORDIALLY approve of the plan set forth in outline in your communication. Professor Sargent was out here last summer, and I talked over some of these matters with him; and I am heartily in favor of anything which will prevent the wanton destruction of the grand heritage we had left us as a nation. It seems incredible to a foreigner, or to any one who has traveled abroad or given the matter any consideration, that we should continue our present methods in the face of the experience of other nations in regard to the management of their forests. And I can only repeat that I am cordially in favor of Professor Sargent's plan, believing as I do that it is practically the only one that is feasible under our present system of government.

D. M. Riordan.

[*President Arizona Lumber and Timber Co.*]

FLAGSTAFF, ARIZONA, November 12, 1894.

FIRE, the ax, and wholesale vandalism, have long threatened the forests of the country with utter destruction; but now, at this darkest time, the light of a better day begins to dawn. The first settlers on the shores of America, seeking farms and bread, naturally regarded a tree as a kind of larger weed, to be got rid of as best they could; the forests seemed boundless, and there was no thought of possible evils resulting from their destruction. Now railroads, carrying everywhere the rapidly increasing population, have rendered nearly every tree in the country accessible to the ax and to fire, till at last the Government has taken alarm, and seems ready to adopt measures to stay destruction and save what is left. The knowledge is gaining ground in the minds of the people that the forests are at once the most valuable and the most destructible of the nation's

natural wealth, and that they must not be left, as heretofore, at the mercy of every wandering hunter, sheep-herder, or lumberman.

The people are beginning to know that forests affect climate, act as barriers against destructive floods, protect and hold in store fertilizing rain and snow, and form fountains for irrigating streams. Gold and silver are stored in the rocks, and can neither be burned nor trampled out of existence; the wealth of our magnificent soil-beds is also comparatively safe: but our forests — the best on the face of the earth — are still exposed to perils which have inflicted calamities on many other countries. The main forest-belt of the Sierra Nevada, with which I am best acquainted, 400 miles long by 40 miles in width, is planted just where it does the most good, and where its removal would necessarily be followed by the greatest evils. Therefore its preservation can hardly be regarded as less than a physical necessity. Here all the rivers on which the fields in the San Joaquin and Sacramento valleys depend for irrigating waters draw their sources. Here the snow falls and is stored up, being prevented by the trees from slipping into the cañons in avalanches, from being drifted into heaps by the winds, and from melting with wastefully destructive energy. Every pine-needle and clasping root, as well as fallen trunk and branch, may be regarded as a dam hoarding the precious bounty of the storm-clouds, and dispensing it in blessings to the lowlands, instead of allowing it to pour headlong in short-lived devastating floods. Lumber-mills may be regarded as centers of desolation in the grand forests of the Pacific coast, but the desolation of sheep and sheep-herder has no center — it is universal.

Incredible numbers of sheep are driven into the California forest pastures every summer, and their courses are marked by desolation. Not only the moisture-absorbing grasses are devoured, but the bushes also are stripped bare. Even the young conifers, which are not eaten by sheep when they can find anything else to stay hunger, are greedily devoured in their famishing condition; and to make destruction doubly sure, fires are set during the dry autumn months to clear the ground of fallen trunks and underbrush in order to facilitate the movements of the flocks and to improve the pastures by letting in the sunshine. The entire forest-belt of California, the noblest and most valuable on the face of the earth, is thus annually swept and devastated from one end of the Sierra to the other, the young trees on which the permanence of the forests depends being eaten and trampled and burned. Indians also burn off the underbrush to facilitate hunting; mountaineers and lumbermen sometimes carelessly allow their camp-fires to spread: but the fires of sheep-men form more than ninety per cent. of all. Even in the moist climates of Oregon and Washington the woods have been swept with destructive fires again and again; for, besides the fires set by man, nature sends down fire from heaven every year in the form of lightning, making the care of man all the more necessary. Only on the wet coast of Alaska have I ever seen a forest wholly free from the destructive marks of fire. Surely the tremendous conflagrations last year in Minnesota and Wisconsin, and lately in other States, ought to be enough to spur any government to action.

I believe that the Sargent forestry plan will prove

a complete solution of all our forest troubles. Already a good beginning has been made by Presidents Harrison and Cleveland in making extensive forest reserves and parks; but the good work must go on. Let the forests on all the head waters of all the rivers in the country be reserved and put under the charge of the War Department,—the most reliable, permanent, unpolitical, and effective department of our Government,—and then forest affairs will be definitely settled, and all our living trees will clap their hands and wave in joy.

But it is impossible, in the nature of things, to stop at preservation. The forests must be, and will be, not only preserved, but used; and the experience of all civilized countries that have faced and solved the question shows that, over and above all expenses of management under trained officers, the forests, like perennial fountains, may be made to yield a sure harvest of timber, while at the same time all their far-reaching beneficent uses may be maintained unimpaired.

The effectiveness of the War Department in enforcing the laws of Congress has been illustrated in the management of the Yosemite National Park. Three years ago, when the park was organized, the Department of the Pacific was called on for a troop of cavalry to protect it. The sheep having been rigidly excluded, a luxuriant cover has sprung up on the desolate forest floor, fires have been choked before they could do any damage, and hopeful bloom and beauty have taken the place of ashes and dust. On the other hand, on the great reservations to the southward of the Yosemite National Park, the forests, except that they are withdrawn from private ownership, are in as bad a condition as before. Warnings against trespass have been posted in abundance on the trees along the trails leading from the lowlands to the head waters of the streams in the woods, warning everybody not to trespass on the nation's property. But in the absence of enforcing power these have proved of no avail. Hundreds of thousands of sheep have been driven into the upper forest pastures, as before, and the usual destruction has gone on unchecked. One soldier in the woods, armed with authority and a gun, would be more effective in forest preservation than millions of forbidding notices. I believe that the good time of the suffering forests can be hastened through the War Department, as outlined in Professor Sargent's plan, and I heartily indorse it.

MARTINEZ, CALIFORNIA.

John Muir.

I BELIEVE in a small but permanent body of United States government foresters, organized, instructed, and drilled,—and also in a similar body of State foresters,—just as I believe in the present efficient corps of the internal revenue marine, the Weather Bureau observers, etc.; but I do not like the military feature of Professor Sargent's scheme. I know that our army and navy offer a fine corps of men who aspire to show their usefulness in times of peace, and to maintain a large and powerful organization ready for the needs of war; but the best interests of our country demand that at present the military be kept in the background, and in a minority, and that those officers of the army and navy who wish to be truly useful in other than strictly military lines of work should resign their commissions, and take place among us as civilians. Their splendid education, physique, and morale will always keep them

prominent, while avoiding all suspicion of retaining a military organization in a country that tries to be at peace and to develop the arts of peace. The military education given freely at West Point and Annapolis should be generally followed, as has already been extensively done in the navy, not by a commission, but by retirement to civil life, just as in the case of the graduates from our universities and colleges. This policy works well here and in other countries. It is unnecessary to intrust the management of forests to any military organization, or to increase the scope of the Military Academy so as to cover the civilian arts and industries. The arts of warfare are a special application of the arts of peace, and it is a perversion of the military school to make it a rival of the civilian schools of engineering, chemistry, forestry, etc. The fact that the military engineers understand the building of military bridges, waterworks, fortresses, and barracks, has already led to their employment by Congress in a vast field of competition with civilian engineers; and it is now proposed to add still another line of government employment which can but increase the opportunity of the local politician to use the army as his tool.

The forest guard should have all the authority of civilian police, but nothing more; and as police, should call upon the military authorities for assistance only in case of insurrection. The education that is needed for the officers and soldiers of the forest guard can, and should, be given at the agricultural colleges and experiment stations that this Government has established in every State. The men who attend these schools have a living interest in forests such as has never been manifested by the students and officers of the military schools.

I believe in forestry instruction, but not at West Point. I believe in forest reservations, of which we have a large number already, and all of which can be used for instruction and practice. I believe in a joint Federal and State forest guard, organized under the Secretary of Agriculture, with educated officers and men, and with a strong organization which shall have as little as possible of the military, and as many as possible of the civilian, features that conduce to the efficiency of our police, our post-office, our railroad, and our telegraph systems.

Cleveland Abbe.

[Professor of Meteorology,
U. S. Weather Bureau.]

WASHINGTON, D. C.

So far about 20,000,000 of acres of the national domain—all west of this longitude—have been "set apart," 3,000,000 as parks, and 17,000,000 as forest reserves. This has been done with general approval, even applause, and with the opposition of only a few local interests. There remains to arouse equal support and enthusiasm in behalf of the *management* of these forests.

This place, at the eastern foot of the Rocky Mountains, my home for twenty-five years, is now partly embraced within one of these reserves, a track of 250,000 acres, including Pike's Peak. Within that period this forest has been repeatedly ravaged by fires, every one preventable; and tie-camps and sawmills have consumed the accessible commercial timber. The result is perceptible in the lessening of the water-supply, in alternations of flood and drought, absence of a local supply of timber, impairment of sylvan beauty, extinction of wild game. But the young and the more inac-

cessible trees remain, and this tract can be gradually reforested. Last week one of the most destructive fires known east of the front range of Colorado occurred in Boulder County, burning ranches, mine improvements, and villages, and threatening larger towns. Many square miles of splendid conifers were destroyed, and the forest cover no doubt was blasted. This calamity, originating, as usual, from an abandoned camp-fire, occurred in the heart of the proposed "Boulder Reserve," the establishment of which, after inspection and recommendation, was delayed by fear of successful opposition from the mining people, who now find themselves the heaviest sufferers. From five to ten capable guards in each of these forests would, I am sure, have saved them from every one of these fires, at least to the extent of any calculable injury.

The numerous dreadful forest fires of the past summer and autumn must have opened the minds of men at last to the importance of action, if only to avert such holocausts; and surely the time is now ripe, if ever, for adopting a "system of forest management in the interest of the people and of posterity." In realizing this necessity, and inviting and opening its columns to its discussion, *THE CENTURY* is heeding and echoing a cry of the broadest patriotism; indeed, more—of civilization.

I approve substantially of Professor Sargent's scheme. I would certainly utilize the national army. We should set our faces like flint against every suggestion to transfer these forests or their care to the States. That way lies danger! They belong to the whole people; and moreover, even their direct influences for good or evil are so wide-spread as to affect vast regions and a score of States. The chief risk to our national forests comes from the laxity of local sentiment, and the supposed self-interest of the local inhabitants, who, although insignificant in number, are, and always have been, powerful for such destruction. Many are but temporary residents, and soon leave for fresh ravages, taking their portable sawmills with them; but for the time being they and the neighbors to whom they afford a market are "the community," and their voice is the loudest one heard.

Professor Sargent's first three suggestions—of forestry instruction at West Point, an experimental forest reservation near by, and the assignment of the best educated of these officers to the control and supervision of the national reserves—are all practical and judicious, and worthy of adoption. One crucial question he does not raise: To whom shall the military officers so educated and put in supervision and control report?

Why not place the whole matter with the War Department, and hold it solely responsible? There would be several advantages besides the consolidation of power and responsibility. There would be less liability to political solicitation, or to changes in personnel or policy with the change of its rulers by the people: the army organization is permanent, and would be a conservative buffer between a new secretary and the pressure of local or other influence. There is no such buffer with the Interior Department. The "forest guards," when enlisted, would be under military instead of civil discipline, and would have no temptation to become partisans to obtain or save their offices. The inestimable force of *esprit de corps*, matured only in permanent soil, would be enlisted in the service of our forests. Finally, the War Department in "piping times of peace" has less

to do than any other, and could more effectively take up this additional duty. It would combine the advantages of ordinary campaigning with the wholesome discipline of regular work, and familiarize our little army with the topography, geography, climate, and other natural characteristics of over half of their native land.

The experience of the writer since 1870 with a Colorado forest tract of 42,000 acres, bought of the Government as offered land for himself and friends, convinces him that the cost of "management" of our forest reserves will be very much less than the popular apprehension has perhaps taken for granted. Fire is the chief enemy. The men needed for defense against that can do everything else necessary. In our case, even at the time of the greatest activity with sawmills and tie-camps (always working on royalty), the force never exceeded three men — one head forester and two assistants. These were a tried sergeant and two men selected from my old cavalry regiment. No seeding or planting was done, but they had abundant time for that also. This pinery was not continuous, and it was equally necessary to protect from fire the intervening tracts; thus the area guarded exceeded 250,000 acres. Numerous fires occurred, almost invariably caused by "campers," who habitually left their fires more or less alive, but our three men proved adequate to prevent any serious consequences. On rare occasions of desperate fires local assistants were called in. These, however, generally proved worthless, one of our own selected and trained men seeming to be worth ten of them.

Largely based on this experience of a quarter of a century, I venture to submit what follows:

First. That with reasonable continuity of employment and responsibility, three selected men in a smooth rolling country, and five to ten where the surface is more rugged, properly stationed and well mounted, can protect, manage, and "cultivate" at least 200,000 acres. The mere moral effect of the constant patrol, of the notices they would put up, of their fencing off roads, and other evidences that somebody valued this property like a family homestead, and intended to plant and harvest it, season in and season out, would alone greatly reduce the outbreak of fires, stop timber stealing, and afford the patrol time for all other work, including reforestation. If mines of coal or metal, or quarries, should exist, their exploitation, if allowed, should be, like that of the timber, under royalty and careful restrictions. The same force could manage this business also, under the reservation officer hereafter mentioned, who should be assisted by an expert when the mining activity should warrant. *But no independent prospecting should be permitted in these forests, and of course no placer-mining.*

Second. We now come to Professor Sargent's last suggestion — the "enlistment of a body of local foresters" as a forest guard "for the purpose of carrying out the principles of forestry thus taught." But if the whole force required is so small, is it worth while to go outside of the regular army? Cannot the permanence which he seeks be attained without raising any new questions of organization or appointment? I would assign to each area of, say, 250,000 acres or less, a forest "cadre" composed of a sergeant and two privates, which should be as permanent as Professor Sargent's proposed local foresters. For a small, smooth

or otherwise easily managed reserve these three would answer. But if the size, ruggedness, or "business" of any forest should require it, additional soldiers, up to ten or more as needed, might be detailed, and in this way they would soon become as good foresters as the permanent men, just as the recruits that filled the vacancies of a regiment during our last war soon became indistinguishable from the old soldiers.

To each reservation of not more than a million acres, as soon as practicable, should be assigned a commissioned officer (one of those educated as Professor Sargent proposes), who would have under him one or more of these sergeant's parties, and be responsible for the welfare of his particular forest; he would in turn report to the commanding officer of his division or department, who should be assisted by a staff-officer assigned for this exclusive duty from among those educated in forestry, and through whom would come all reports on forest matters, including the accounts of revenue and expense. The sense of duty and pride of these generals would then be as alert to defend and give a good account of their forests as now to put down Indian revolts, or to perform any other military duty.

Third. Was there ever such a patrimony waiting to be saved at such an insignificant cost? Perhaps a thousand men would suffice for the twenty million acres of national forestage so far reserved. If the forests still belonging to the nation were as unburned to-day in Colorado and Utah as they were when the writer first established his home here, there is no question but the royalty from timber judiciously cropped would from the beginning cover all the costs of management and culture, even if all the guards, officers and men, had to be specially employed and paid for the purpose. Fir timber from Oregon, and redwood ties from California, are already coming a thousand miles overland to Utah, and the timber half as far again to Colorado. But even as it is, if the national forests are turned over to our army, as proposed, before further serious destruction occurs, I believe the royalties, taken as a whole, will not only cover all additional cost to the military service of forest management, but yield a large profit. I do not mean for a few years of destructive activity, but permanently, as from "a going concern."

Fourth. Meantime it is to be hoped that the President will continue the beneficent policy of creating forest reserves where careful investigation shall show that they are practicable, until we have at least twice as large an area saved from the spoiler.

Thus those grand and beneficent objects of forest preservation and culture, which even more than the question of wood-supply constitute the chief motive for immediate action, may be realized as a "by-product"; and the nation may "eat its cake and have it, too."

William J. Palmer.

GLEN EYRIE, COLORADO, November 22, 1894.

THE Yellowstone Park, with its adjacent timber reserve, has an area larger than the States of Connecticut and Rhode Island combined. Over nearly this entire tract there is an extremely dense growth of a highly resinous conifer. The trees are generally very tall, but too small to be of much use as lumber. On this pla-

tear rise streams flowing in all directions, but ultimately reaching the Gulf of Mexico or the Pacific. The enormous rise in these streams due to spring freshets produces incalculable loss. No better object-lesson in the need of timber preservation can be found than is to be seen here each June. The road from Norris to the Grand Cañon runs nearly east and west. In building this road the trees were cut out to a width of about fifty feet. The spring sun, shining obliquely through the opening thus made in the tree-tops, melts a strip some twenty-five to fifty feet to the north of the road, while the roadway is still blocked with from one to three feet of snow. If all the timber were removed from this immense area, the snow would disappear at least a month earlier than it does, and destruction to roads, bridges, and crops would follow from the freshets, with a corresponding loss from droughts later in the season.

So far as the protection of these forests is concerned, I have only to consider the one question of fires. A fire once established in the top of these trees, with a moderate breeze blowing, no human effort can overcome it until the wind dies down, or some obstacle is reached. A man on horseback can hardly escape before it. If from any cause it should die down, it must

still be watched for days, lest some new gust of wind send sparks into the dry pine-needles, and start it up again. These fires generally originate from one of three causes: (1) lightning; (2) the rubbing together, by the wind, of two trees; or (3) fires started by human agency. Of course the last cause is the most frequent. The great success met with in controlling the fires here has resulted from the constant system of patrols kept up upon all the traveled routes. The smallest spark left behind by a camping-party is extinguished before it can gain any headway.

As to Professor Sargent's scheme, the course at the Military Academy could be made to cover all that is desirable by small additions, in the shape of lectures, to the course in chemistry. An experimental forest reservation is most necessary, but I regard West Point as very poorly located for the purpose, the trees there not being suitable either in size or kind. The soldiers of this command serve every purpose of the forest guard recommended by him, and do so most satisfactorily.

George S. Anderson.

[*Captain U. S. A., in charge of
Yellowstone National Park.*]

TOPICS OF THE TIME.

The Need of a National Forest Commission.

THE letters on the forestry question in the present number of *THE CENTURY*, representing as they do various points of view of men of experience and authority in this field, are worthy the careful attention of American readers. The advantages of the plan suggested by Professor Sargent for protecting the forests on the public reservations, are that it is cheap, and that it can be put into immediate operation. The disadvantages of employing officers of the United States army as forest guardians are evident: it imposes a service upon them outside their regular duties as officers of the army; and the cadets at West Point have not the time, in addition to other necessary studies, to devote a sufficient number of hours to learning the art and practice of forest management to become accomplished forest officers in the German and French meaning of the term. It must be remembered, however, that the present value of forest products in the United States, and the cost of labor here, do not yet justify the elaborate care of our forests which has proved such a good investment in more thickly settled and less wooded countries; and that to establish a forest school, train professors, and form forest officers must be a work of many years, even if it is possible to establish, except in connection with the academy at West Point, a government technical school of this character which, to be successful, must be entirely free from political influences. For this remoter purpose, what is needed is not perhaps a department of forestry in the Military Academy, so much as a system of control, under whatever bureau, that shall be modeled on military organization and authority.

What is needed in this country now is a force to take

immediate charge of the forest reservations, to protect them from fire and unlawful trespass, and to execute such laws for their management as may be from time to time prescribed by Congress. The officers of the army are now the only men suitable for this duty. It is not necessary that such forest guardians should be profoundly versed in the science of forestry; they may be expected, however, to perform their duties more intelligently and with greater efficiency if, graduated from West Point, they have received at the academy some such elementary instruction on the subject as might be acquired from a few courses of lectures and occasional excursions into the forest reservation, which might be added advantageously to the equipment of the Military Academy. Such a plan, of course, is only a temporary one; for the time will come when the forests of the United States must be managed with the same care and precision as those of other civilized countries. It seems to fill, however, a transition period, and certainly nothing more practical has been suggested.

The Government needs more information than it now possesses before it can formulate an intelligent national forestry policy; it is doubtless desirable that additional forestry reservations should be made on the public domain, and it is possible that the boundaries of some of those already made should be changed in order to insure their greatest usefulness. Part of the Yosemite National Park might be given up, but Congress should on no account permit the cutting off of the northern and southwestern portions coveted by the lumbermen. The whole question of the proper relations of the reservations to the people living near them is an important one which has not been sufficiently studied; and the various opinions as to the proper

management of the reservations expressed by the men whose views we have printed, show that further studies and discussions are needed before any one can feel sure which plan is the best. No one realizes this want of knowledge so much as those men who have been able to devote the most thought to this question, and who have seen the most of our Western forests.

We join with "Garden and Forest" in urging the appointment by the President of the United States of a commission composed of men of sufficient reputation to make their recommendations heeded, whose business it shall be to study the whole question of forest preservation, and to report fully upon it to Congress. Until such a report has been prepared all forest lands on the public domain should be withdrawn from sale and entry.

An Appeal to Common Sense.

THE last annual report of the Postmaster-General, Mr. Bissell, contains what can best be styled an appeal to the plain common sense—what General Grant called the "horse sense"—of the American people. It is made in behalf of the postal service of the country, but it applies with no less force to all the minor offices. Mr. Bissell says that "to one whose duty it is to study the vast mechanism of the postal system in detail, the fact soon becomes too plain for contradiction, that it is a business and not a political system." He then goes on to show that in spite of the fact that the popular intelligence has long outgrown the notion that one political party has a monopoly of administrative talent, we act upon that notion every time there is a political change in the Presidency by turning out all the postmasters, and putting men of opposite politics in their places, though in doing this we, in many instances, force a change of postmasters upon communities which have just cast a majority vote against any change whatever. A community which has voted for the continuation of a Republican administration at Washington is compelled, for example, to have a Democrat for postmaster for four years because the country as a whole has taken a different view. Four years later, this man, who has barely had time to become familiar with his duties, and thus become a useful public servant, is turned out, and an inexperienced man is put in his place, who must learn the business all over again. As Mr. Bissell says, time spent by the Postmaster-General in selecting a suitable person for the office under such conditions seems to be wasted. No matter how well the appointee conducts the office, he must go out at the end of four years, provided a President whose political creed differs from his comes into power at Washington.

The absurdity of this system is apparent if we apply the principle of it to any private business of like character and magnitude. Imagine for a moment the great express companies of the country changing their employees every four years, simply because they had put at their heads presidents of different political views. Imagine them, also, selecting their heads of departments, local managers, and all employees, not because of their ability and fitness, but because of their political creeds. One express company, for example, would have only Republicans to attend to the distribution of its packages; another would have only Democrats. Apply the same system to a great railway company, and imagine how long its road would be able to continue in operation. The idea is so preposterous that it

cannot be entertained for a moment. No express or railway company would act for an instant on the assumption that the capacity and fitness of an employee depended upon his political belief. Yet the postal business of the country, which is of greater magnitude and of no less responsibility than that of any railway or express company, is in large part conducted on this assumption.

Furthermore, the postal service is as far removed from politics in its duties as the service of a railway or express company. As the Hon. Carl Schurz pointed out in his admirable address before the National Civil Service Reform League in April, 1893, a postmaster has to receive and distribute, not Democratic or Republican letters, but simply letters. He is a public servant, and his usefulness depends entirely upon his ability to receive and distribute in the way most satisfactory to the whole community the letters which come to him. If he allows partizan influences to enter at all into this work, he becomes at once an unfit official, and should be removed.

A few months ago the postmaster of New York city, Mr. Dayton, visited foreign cities with a view to studying their postal systems, and on his return he said of the system of Great Britain:

It is hard for an American to realize how completely the notion of partizanship, offensive or defensive, has been eradicated from the civil service there. The postmaster-general is, of course, a politician, who retires with a change of administration. When he is an important public and party man, like Mr. Morley, he has a seat in the cabinet. But think of it! Out of the 125,000 men in the postal service of Great Britain, not to mention 16,000 women, he is positively the only individual whose tenure of place can be affected by any political change.

That is common sense; that is civilized government. Mr. Dayton said that he had investigated the question of partizan feeling among the postal employees, and could find no trace of it. "It is not," he added, "that they dissemble it; they simply don't feel it—don't know what it is." Neither would our postmasters and their subordinates feel it here if they were in the service under like conditions. It is because their tenure depends upon their political views that they are partizans. There is no complaint of partizanship heard in reference to that portion of the employees in the postal and other branches of the civil service which have been placed under the regulations of the civil service law. This is not to say that such civil servants do not hold political opinions and act upon them at the polls; but there is no "offensiveness" in their partizanship in connection with their public work.

There are in the United States 69,805 post-offices, and of this number 3428 are what are called Presidential. The remaining 66,377 are called fourth class. If all these were to be taken out of politics and put on a simple, every-day business basis,—that is to say, were put under the civil service regulations,—does anybody doubt that a great and lasting benefit would be achieved for the whole country? All that would be done would be to establish in the postal service the business principle that every postmaster should hold his office during good behavior. Politics would have no more to do with him than with an express agent or the manager of a telegraph office. Nothing could get him out of office save a demonstration of unfitness or dishonesty. And if we were to do this with the post-offices, why not with