The addition of a colloid is also expected to render the concrete impermeable and make unnecessary any other waterproof treatment. Mr. Edison also believes that because of the low conductivity of concrete, no difficulty will be experienced from condensation of the inside of the walls, and it is proposed to leave the inside surfaces produced by the mold plates without further treatment, unless tinting be desired for purposes of decoration. It is also interesting to note that no joint will be provided to take up contraction and expansion.

The use of plungers, power driven, to keep the concrete agitated and assist in its flow, is a very novel feature, and results will be observed with much interest. It would seem that plungers large enough to be effective would subject the molds to considerable

strain, and if the effect is violent enough to cause quick or unusual motion in the concrete, it suggests the possibility of the displacement of reinforcement, unless the same be very rigidly fixed in position.*

In connection with the proposition to raise the concrete to the top of the building, by means of a bucket elevator, a computation reveals the following interesting facts, viz., if the buckets be of $\frac{1}{2}$ cubic foot capacity each, they must discharge at the rate of 18 buckets per minute to handle 200 cubic yards in ten hours. If of $\frac{3}{4}$ cubic foot capacity each, they must discharge at the rate of 36 buckets per minute. In either case, this means a belt or chain speed of from

* On this point Mr. Edison states that the area of agitation cannot extend more than three feet.

$\frac{1}{3}$ to $\frac{1}{2}$ more in each case, and the loading of the buckets by continuous discharge from the hopper suggests the possible waste of some material and the fouling of the chain or belts to an extent that would probably cause some trouble. It would be impractical to load the buckets full of such fluid material owing to waste.*

Mr. Edison has, undoubtedly, taken a bold step in the right direction, and the new ideas that are set in motion by his experiments will doubtless evolve a scheme by which the cost of the forms will be materially reduced, and the time required for construction greatly shortened.

* This Mr. Edison answers with the statement that the buckets can overflow. The elevator has a back to permit spills to flow back to the reservoir.

WHAT FORESTRY HAS DONE.

THE NEED OF THE PRESERVATION OF OUR TIMBER SUPPLY.

MANY people in this country think that forestry had never been tried until the government began to practise it upon the national forests. Yet forestry is practised by every civilized country in the world except China and Turkey. It gets results which can be got in no other way, and which are necessary to the general welfare.

What forestry has done abroad is the strongest proof of what it can accomplish here. The remarkable success of forest management in the civilized countries of Europe and Asia is the most forcible argument which can be brought in support of wise forest use in the United States.

The more advanced and progressive countries arrive first and go farthest in forestry, as they do in other things. Indeed, we might almost take forestry as a yardstick with which to measure the height of a civilization. On the one hand, the nations which follow forestry most widely and systematically would be found to be the most enlightened nations. On the other hand, when we applied our yardstick to such countries as are without forestry, we could say with a good deal of assurance, by this test alone, "Here is a backward nation."

The countries of Europe and Asia, taken together, have passed through all the stages of forest history and applied all the known principles of forestry. They are rich in forest experience. The lessons of forestry were brought home to them by hard knocks. Their forest systems were built up gradually as the result of hardship. They did not first spin fine theories and then apply those theories by main force. On the contrary, they began by facing disagreeable facts. Every step of the way toward wise forest use, the world over, has been made at the sharp spur of want, suffering, or loss. As a result, the science of forestry is one of the most practical and most directly useful of all the sciences. It is a serious work, undertaken as a measure of relief, and continued as a safeguard against future calamity.

The United States, then, in attacking the problem of how best to use its great forest resources, is not in the position of a pioneer in the field. It has the experience of all other countries to go upon. There is no need for years of experiment with untried theories. The forest principles which hundreds of years of actual practice have proved right are at its command. The only question is, How should these be modified or extended to best meet American conditions? In the management of the national forests the government is not working in the dark. Nor is it slavishly copying European countries. It is putting into practice, in America, and for Americans, principles tried and found correct, which will insure to all the people alike the fullest and best use of all forest resources.

Take the case of Germany. Starting with forests which were in as bad shape as many of our own which have been recklessly cut over, it raised the average yield of wood per acre from 20 cubic feet in 1830 to 65 cubic feet in 1904. During the same period of time it trebled the proportion of saw timber got from the average cut, which means, in other words, that through the practice of forestry the timberlands of Germany are of three times better quality to-day than when no system was used. And in fifty-four years it increased the money returns from an average acre of forest sevenfold.

In France forestry has decreased the danger from floods, which threaten to destroy vast areas of fertile farms, and in doing so has added many millions of dollars to the national wealth in new forests. It has removed the danger from sand dunes and in their place has created a property worth many millions of dollars. Applied to the state forests, which are small in comparison with the national forests of this country, it causes them to yield each year a net revenue of more

than \$4,700,000, though the sum spent on each acre for management is over 100 times greater than that spent on the forests of the United States.

France and Germany together have a population of 100,000,000, in round numbers, against our probable 85,000,000, and state forests of 14,500,000 acres against our 160,000,000 acres of national forests; but France and Germany spend on their forests \$11,000,000 a year and get from them in net returns \$30,000,000 a year, while the United States spent on the national forests last year \$1,400,000 and secured a net return of less than \$130,000.

In Switzerland, where every foot of agricultural land is of the greatest value, forestry has made it possible for the people to farm all land fit for crops, and so has assisted the country to support a larger population, and one that is more prosperous, than would be the case if the valleys were subjected to destructive floods. In a country as small as Switzerland, and one which contains so many high and rugged mountains, this is a service the benefits of which cannot be measured in dollars. It is in Switzerland also, in the Sihlwald, that forestry demonstrates beyond contradiction how

certainly secure what wood she needs in the future.

Fourth, when the forest countries are compared as to wood imports and exports, and when it is realized that a number of the countries which practise forestry are even now on the wood-importing list, the need of forestry in the export countries is doubly enforced.

Russia, Sweden, Austria-Hungary, and Canada, for instance, are making good the wood deficit of a large part of the world. Sweden cuts much more wood (106,000,000 cubic feet) than she produces; Russia, in spite of her enormous forest resources, has probably entered the same road; and England, the leading importer of wood, must count more and more on Canada. But the United States consumes every year from three to four times the wood which its forests produce, and in due time will doubtless take all the wood that Canada can spare. In other words, unless the countries of the western hemisphere apply forestry promptly and thoroughly, they will one day assuredly be held responsible for a world-wide timber famine.

Fifth, in comparison with foreign countries, the prospects for forestry in the United States are particularly bright, for the following reasons:

1. We start with the assurance that success can certainly be attained.
2. We have few of the handicaps which have trammelled other countries. We have no ancient forest rights and usages with which to contend, or troublesome property questions to settle.
3. The results which other lands have achieved by long struggle, often with bitter costs, are free to us to use as we wish. We have, it is true, our purely national and local forest questions, but the key to many of them is somewhere in the keeping of the countries which have achieved forestry.
4. In variety combined with value our forests are without a parallel in the world. They produce timber adapted to the greatest variety of uses, so that, except to meet shortage, importations of wood are unnecessary. Furthermore, transportation facilities enable us to make every forest region available. Thus, by specializing our forest management, each kind of forest may be made to yield the kind of material for which it is best adapted, and the wastes due to compulsory use of local supplies may be practically eliminated.

A SIMPLE HOME-MADE STILL.

great a yield in wood and money it may bring about if applied consistently for a number of years.

A circular entitled "What Forestry Has Done," just published by the Forest Service, and obtainable upon application to the Forester, Washington, D. C., reviews the forest work of the leading foreign countries. The chief lessons which may be learned from them are summarized as follows:

What forestry has done in other countries shows, first of all, that forestry pays, and that it pays best where the most money is expended in applying it. The United States is enormously behindhand in its expenditure for the management of the national forests, but nevertheless returns have already increased with increased expenditure for management.

A second lesson, clearly brought home by foreign forestry, is the need of timely action, since forest waste can be repaired only at great cost.

Third, private initiative does not suffice by itself to prevent wasteful forest use. England, it is true, has so far consistently followed a let-alone policy. However, England has been depending upon foreign supplies of wood. Now that all Europe is running behind every year in the production of wood (2,620,000 tons), and there are unmistakable signs that countries which lead as exporters of wood will have to curtail their wood exports, England is at last feeling her dependence and is speculating uneasily as to where she can

HOME-MADE WATER STILL.

By L. W. MARSHALL.

For producing distilled water in small quantities, I have designed a still which consists of a tin percolator, 1, a coil of pipe, 2, and a tea kettle, 3, or other suitable vessel. The percolator has a hole cut near the top to which a tin tube, 4, is soldered, in order that the water from the ice may pass off.

To use this still, fill the percolator with cracked ice and attach the upper end of the pipe to the spout of the kettle in which the water is to be boiled. The lower end of the pipe should fit the neck of the percolator tight, so that the water from the melting ice cannot contaminate the distilled water in the receptacle underneath.—Druggists' Circular.

A patent has been taken out for a process of manufacturing calcium carbide, according to which the molten substance when tapped from the furnace is poured into molds coated internally with finely-powdered coke, wood charcoal, or lampblack. The idea of the invention is that the semi-fluid carbide shall react with the carbon, the excess of lime present in the substance as it leaves the furnace being thereby decomposed and a corresponding quantity of fresh carbide being formed. It is stated that under the conditions mentioned the reaction proceeds so violently that the liberation of the oxygen causes the carbide to effervesce or boil.