

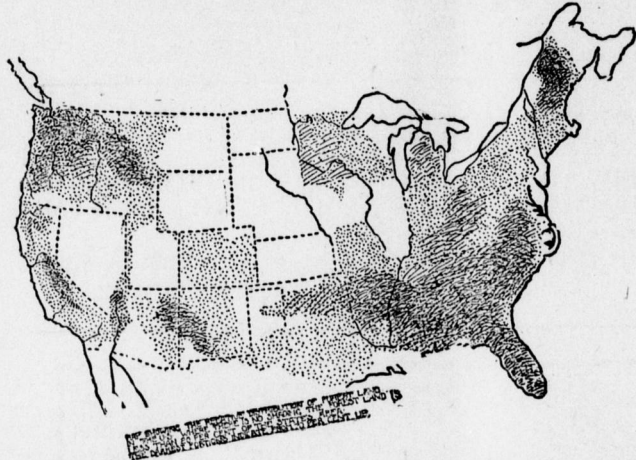
# Summer Heat May Become Unbearable.

National Danger Impending From Forest Destruction.

THESE modern hot waves, with sunstroke and death on every hand, have become a serious problem for science to solve. Important facts are herewith presented on the subject. It is believed that the rapid destruction of the great forests of the country by careless settlers, lumbermen and wood pulp makers are the chief cause of this marked recent change in our climate.

It had not rained there for eight years. The dust was a foot deep, and the burning heat of the sun seemed to wither the very faces of the muleteers driving their silver laden asses through the streets.

In the spectral Middle Park of Colorado one sees a vast desolation of stupendous mountains, isolated and in clusters, absolutely naked—without tree or shrub. Ages ago the Indians,



mate. And it is thought by some experts that without trees the earth would be uninhabitable.

It is only in the United States and India, it is declared, that these devastating heat waves periodically sweep vast areas. In Europe—Germany and France especially—where forests are protected by law and heavy penalties rigidly enforced for violations, such outbursts of heat, as a rule, are unheard of.

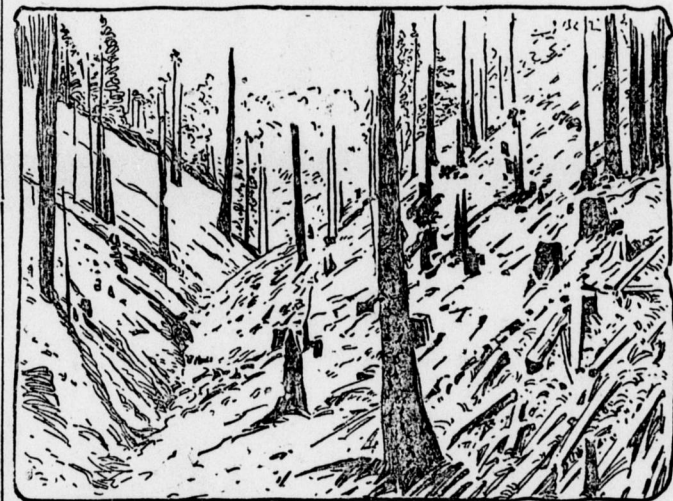
It has long been known "to a mathematical certainty" that drought increases with the disappearance of forests. Trees not only create moisture and invite rain, but their roots, leaves and underbrush hold the rain that falls long enough to be absorbed by the earth.

As hills and mountains, by fire or axe, lose their forest, the soil dries up and vegetation languishes, while valleys and canyons are flooded, often with disastrous results. This is the case around Pittsburg and in other hilly localities which have been

it is supposed, living in that once pastoral region, fleeing before invading tribes, burned the forests behind them.

On every side, in a grand encircling amphitheatre, peaks of the Rocky Mountains rise to the snow line hemming in this Middle Park, fortunately supplied with rivers flowing swift and deep from the canyons of the snowy range. But the rainfall is said to be decreasing with the destruction of pine forests of the higher mountains.

In view of the vital necessity of protecting the timber yet remaining in Colorado, the Forestry Association, composed of the best men in that State, was early organized, stringent



DESTRUCTION IN THE RED WOOD BELT OF CALIFORNIA.

laws passed and vigilant watch kept to prevent destruction.

The terror of fires in the Rocky Mountains is akin to that of volcanoes and earthquakes. When once started by careless hunters, a match thrown into a bunch of dry grass, or by incendiaries, timber thieves and the like, vast tidal waves of flame sweep the pine clad slopes rising to lofty altitudes and stretching for miles along the great ranges. It has been observed that the absence of timber even in the mountain parks interferes with the rainfall, causing periods of drought, or violent rainstorms doing great damage and passing quickly away.

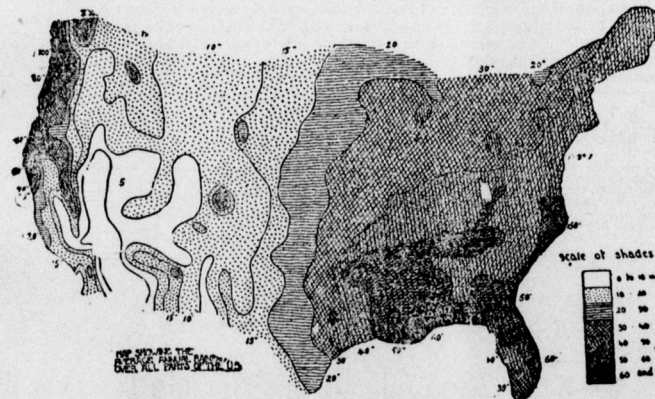
Irrigation, followed by vegetation and tree planting, brings rain. This has been demonstrated all over the greater West.

In former times the summer storms were chiefly confined to the mountains of Colorado. Now they spread out on the plains, following the rivers, with their miles of wide areas of irrigated fields and recently planted timber belts. Moisture begets moisture, and

GROWING CORN IN A FOREST IN NORTH CAROLINA—THE TREES HAVE BEEN GIRDLED TO KILL THEM, AND THIS PRIMITIVE SORT OF AGRICULTURE IS CARRIED ON IN THE INTERVENING SPACES.

stripped of timber for fuel and manufacturing purposes.

On the great plains rain seldom falls. When it does it is a cloudburst. The washouts that come once in three or four years in Arizona are of indescribable violence. Eastern readers would scarcely believe that on the parched alkali deserts a cloudburst a few years ago along the Southern Pacific east of Tucson in half an hour buried sections of the railroad track thirty feet deep in sand, filled gorges, changed the course of rivers, wound steel rails as if they were wire around the few straggling cottonwood trees skirting a dry stream twenty or thirty feet above the old track, and plowed



chasm in the tarantula beds clear down to solid rock.

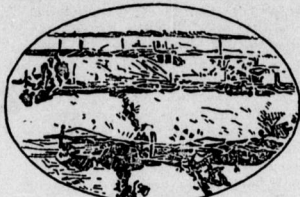
In that strange city of San Luis Potosi, in Old Mexico, where the timber disappeared long ago, I was told that

with it comes a milder tempered atmosphere, gentle showers and cooling breezes, instead of erratic periods of drought, floods and cyclones.

All this, with many other facts, has

an important bearing on the phenomena of heat waves now exciting so much concern.

I called on Mr. George Sudworth, Acting Chief of the United States



MODE OF REFORESTING A HILLSIDE BY ESTABLISHING BARRIERS OF BRUSH TO HOLD SOIL IN WHICH YOUNG TREES ARE TO BE PLANTED.

Forest Bureau, in Washington, for his views. He said:

"There is much difference of opinion on the subject among scientific men, but students of forestry are as a rule convinced that the wholesale destruction of trees in this country has had much to do with the recent aggravation of the meteorological phenomenon known as the 'hot wave.'

"Hot waves may almost be said to be peculiar to this country. They occur in India, but in Europe and most other parts of the world they are unknown. We find them uncomfortable, but as yet we have not learned with any degree of certainty the causes that bring them about. Future investigation is likely to throw more light upon the subject. I am satisfied a principal cause of the severe heated spells of recent summers has been the wholesale wiping out of forests.

"That forests affect the air's temperature there is no doubt. Evaporation within the limits of a forest goes on much more slowly than outside. This means moisture, and with moisture comes a cooling of the atmosphere. In regions largely forested the temperature is usually much lower.

"We have long observed that areas originally humid are dried up by deforestation. Regions once heavily wooded, with plenty of water in streams and springs, have become parched, the streams being either dried up or nearly dry. The forest covered water-shed means a spongy layer of 'humus,' or leaf-mold, which absorbs rain. This sponge, spread over the soil, gives up its water slowly, and thus the supply of moisture remains in the water shed for a longer time.

"Wipe out the forest cover, and the spongy layer disappears. Even though the amount of rainfall remains unaltered, the smooth surface allows the

The forest may be regarded as a blanket, with which nature covers the earth for its protection. This blanket says Professor Mark W. Harrington, "determines many of the features of climate."

Says Professor Sargent: "The forests in the mountain regions are essential to prevent destructive torrents and to maintain the flow of the rivers."

We consumed last year more than 36,000,000,000 square feet of sawed lumber alone.

The annual consumption of our forests is 25,000,000,000 cubic feet. To furnish this amount would require the produce of 1,200,000,000 acres of woodland, whereas our total forest area is less than 500,000,000 acres. It will be seen, then, that we are drawing upon our forest capital, whereas we ought to be using only the interest.

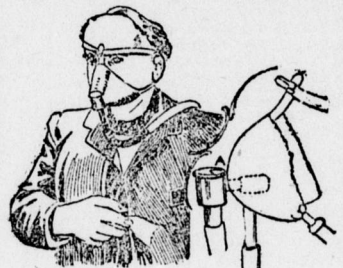
The greatest timber consumption is for firewood. We burn for heating and manufacturing purposes annually 180,000,000,000 feet, board measure—four times as much as we use for all other purposes put together. However, most of the firewood supply is of timber unsuitable in size or quality for the sawmill.

The conclusion of all this seems to be that because we must have toothpicks, matches, coffins and firewood, and, incidentally, wood for ships and houses, with timber thieves and incendiaries running riot destroying forests, the globe is to be made uninhabitable.—New York Herald.

## OXYGEN FOR BALLOONISTS.

An Improved Apparatus Designed by a French Savant.

The investigations of Bert have made clear the action of oxygen on organisms subjected to feeble atmospheric pressure. His numerous experiments have shown that the accidents to which one is exposed in rarefied air



OXYGEN APPARATUS FOR BALLOONISTS.

can be avoided by keeping nearly constant the quantity of oxygen taken in at each respiration. Accordingly, since his time, aeronauts have carried with them oxygen, which they breathe through a flexible tube fitted with a mouthpiece.

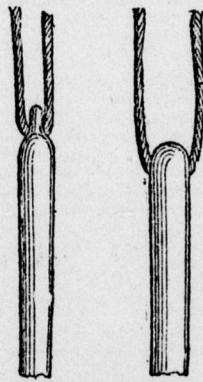
M. Caillaet, in a paper read before the Paris Academy of Sciences, remarks that this method of taking the oxygen is defective. Ever since birth we have been accustomed to breathe through the nose, and aeronauts have difficulty in giving up this habit and breathing through the mouth. Thus the oxygen inspired through the mouthpiece scarcely fills the mouth, and is ordinarily rejected without having penetrated to the lungs.

The author presented to the academy an apparatus enabling aeronauts to carry and have at their disposal large quantities of oxygen stored in small volume, and to assure the absorption of the gas without taking any particular care. It is composed (1) of one or several vessels containing liquid oxygen, (2) of a recipient in which this is turned into gaseous oxygen, and (3) of a kind of mask which renders the respiration of the gas certain.

Pure oxygen almost always causes nausea and illness. To avoid this M. Caillaet has placed in the mask a shutter with variable opening, enabling the wearer to mix with the oxygen a certain volume of air. The aeronaut regulates this opening so that the oxygen increases in amount with the height, and with the object of preventing the condensation of the water vapor contained in the respired gases, he allows it to escape by a flexible tube furnished with a special valve and hidden under the aeronaut's clothes to prevent freezing.

## An Improvement in Needles.

An improvement has just been made by a French needle manufacturer, which is said to have several advantages. It is shown by the accompany-



A NEW FRENCH NEEDLE.

ing cut, which clearly also shows the nature of the innovation which lies in the method of putting on the eye. A needle thus equipped is said to pass through the material with much more ease than is experienced with the old style, and the strength of the cotton cannot be impaired by its repeated passages through the cloth, as is frequently the case with the instrument now in vogue.

A watch may give tick, but a wis- jeweler doesn't.

## DR. TALMAGE'S SERMON

SUNDAY'S DISCOURSE BY THE NOTED DIVINE.

Subject: The Persuasive Word—It Calls All People to Gladness—What We Most Need—The Star of Faith—There is Pardon For All.

(Copyright, 1901.)

WASHINGTON, D. C.—In this discourse Dr. Talmage calls all people to gladness and to the Christian religion. He reads; texts, Genesis vi, 18, "Come;" Revelation xxii, 17, "Come."

Imperial, tender and all persuasive is the word "come." Six hundred and seventy-eight times it is found in the Scriptures. It stands at the front gate of the Bible, as in my first text, inviting antediluvians into Noah's ark, and it stands at the other gate of the Bible, as in my second text, inviting the postdiluvians of a later age into the ark of Saviour's mercy. "Come" is only a word of four letters, but it is the queen of words, and nearly the entire nation of English vocabulary bows to its sceptre. It is an omen into which empires ten thousand rivers of meaning flow. Other words drive, but this beckons. All moods of feeling hath that word "come." Sometimes it weeps and sometimes it laughs. Sometimes it prays, sometimes it tempts and sometimes it destroys. It sounds from the door of the church and from the ragged lips of sin, from the gates of heaven and the gates of hell. It is confluent and accretion of all power. It is the hearse of most of the future. "Come" may pronounce it so that all the heavens will be heard in its cadences or pronounce it so that all the woes of time and eternity shall reverberate in its one syllable. It is on the lip of saint and profane. It is the mightiest of all solicitations either for good or bad.

To-day I weigh anchor and haul in the planks and set sail on that great word, although I am sure I will not be able to reach the farther shore. I will let down the masting line into this sea and try to measure its depths, and, though I tie together all the cables and cordage I have on board I will not be able to touch bottom. All the power of the Christian religion is in that word "come." The dictation and commentary in religion are of no avail. The imperative mood is not the appropriate mood when we would have people saved. They may be coaxed, but they cannot be driven. Our hearts are like our homes—a friendly knock the door will be opened, but an attempt to force open our door would land the assailant in prison. Our theological seminaries, which keep young men three years in their curriculum before they are permitted to enter the ministry, will do well in so short a time they can teach the candidates for the holy office how to say with great emphasis and intonation and power that one word "come."

That man who has such efficiency in the word "come," when he has already had such power to persuade people to quit the wrong and begin the right went through a series of losses, bereavements, persecutions and the trials of twenty or thirty years before they could make it a triumph of grace every time they uttered the word "come."

You must remember that in many cases our "come" has a mightier "come" to conquer before it has any effect at all. Just give me the accurate census of the testis or of the many are down in fraud, in drunkenness, in gambling, in impurity or in vice of any sort, and I will give you the accurate census or statistics of how many have been slain by the word "come." "Come and click, we glory with me at this ivory bar." "Come and see what we can win at this gaming table." "Come, enter with me this doubtful speculation." "Come with me and read those infidel tracts on Christianity."

"Come" will lead me to a place of banishment. "Come with me in a gay boat through the underground life of the city." If in this city there are 20,000 who are down in moral character, then 20,000 fell under the power of the word "come." "Come" will lead me to a place of banishment. "Come with me in a gay boat through the underground life of the city." If in this city there are 20,000 who are down in moral character, then 20,000 fell under the power of the word "come."

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tion is their subtraction. Five hundred persons start for a certain goal of success. One reaches it, and the other 499 are made. It would take volumes to hold the story of the wrongs, outrages and defamations that have come upon you as a result of your success. The warm sun of prosperity brings into life a swarm full of annoying insects. On the other hand, the unfortunate success has out-angles for maintenance. To achieve a livelihood by one who had nothing to start with and after awhile for a family as well and carry this on until children are reared and educated and fairly started in the world and to do this amid all the rivalries of business and the uncertainty of crops and the fickleness of tariff legislation, with an occasional labor strike and here and there a financial panic thrown in, is a mighty thing to do, and there are hundreds and thousands of such heroes and heroines who live unsung and die un- honored.

What we all need, whether up or down in life or half way between, is the infinite solace of the Christian religion. And so we employ the word "come." It will take all eternity to find out the number of business men who have been strengthened by the promises of God and the people who have been saved by the ravens when other resources gave out and men and women who, going into this battle armed only with needle or saw or axe or yardstick or pen or type or shovel or shoe, have gained a victory that made the heaven and earth ring with the resources of God promised for every exigency no one need be left in the lurch.

I like the lady displayed years ago in Drury lane, London, in a humble home where every particle of food had given out and a kindly soul entered with tea and other table supplies and found a kettle on the fire ready for the tea. The benevolent lady said, "How is that you have the kettle ready for the tea when you had no tea in the house?" And the daughter in the home said: "Mother would have me put the kettle on the fire, and when I said, 'What is the use of doing so when we have nothing in the house?' she said, 'My child, God will provide for you. He has already provided for me through all pain and helplessness, and He will not leave me to starve at last. He will send us help though we do not see how. We have been waiting all day for something to come, but until we saw you we knew not how it was to come.' Such things the world may call coincidences, but I call them Almighty deliverances, and, though you do not hear of every day, they are occurring every hour of every day and in all parts of Christendom.

Those who follow the advice of this world in time of perplexity are in a fearful round, for it is one bewildered soul following another bewildered soul, and only those who have their eyes fixed on their eye on the morning star of our Christian faith can find their way out or be strong enough to lead others with an all persuasive invitation.

"But," says some one, "you Christian people keep telling us to 'come,' and we do not tell us how to come." That charge shall not be true on this occasion. Come believing! Come repenting! Come praying! After all that God has been doing for 6000 years, sometimes through patriarchs and sometimes through prophets and at last through the culmination of all the tragedies on Golgotha, can any one think that God will not welcome your coming? Will a father at vast outlay construct a palace for his son and lay out parks, white with statues and green with foliage and all a sparkle with fountains and then not allow his son to live in the house or walk in the parks? Has God built this house of gospel mercy and will He then refuse entrance to his children? Will a Government at great expense build life-saving stations all along the coast, and boats that can hover unharmed like a petrel over the wildest surge and then when the lifeboat has reached the wreck of a ship in the offing, not allow the drowning to seize the life line or take the boat for the shore in safety? Shall God provide at the cost of his only Son's assassination escape for a sinking world and then turn a deaf ear to the cry that comes up from the breakers?

"But," you say, "there are so many things I have to believe and so many things in the shape of a creed that I have to adopt that I am kept back." No, no! You need believe but two things—namely, that Jesus Christ came into the world to save sinners and that you are one of them. "But," you say, "I do believe both of those things." Do you really believe them with all your heart? Yes. Why, then, you have passed from death to life. Why, then, you are a son or a daughter of the Lord Almighty. Why, then, you are an heir or an heiress of an inheritance that will declare dividends from now on, when the stars are dead. Hallelujah! Prince of God, do you not mount up and take your coronet? Princess of the Lord Almighty, why do you not mount your throne? Pass up into the light. Your boat is anchored, why do you not get ashore? Just plant your feet hard down, and you will feel under them the Rock of Ages.

I challenge the universe for one instance in which a man in the right spirit appealed for the salvation of the gospel and did not get it. Now, if you are going to let all the years of your life go away with you without your having this great peace, this glorious hope, this bright expectancy?

Are you going to let the pearl of great price lie in the dust at your feet because you are too indolent or too proud to stoop down and pick it up? Do you wear the chain of evil habit when near by you is the hammer that could with one stroke snap the shackle? Will you stay in the prison of sin when here is a gospel key that would unlock your incarceration? No, no!

As the one word "come" has sometimes brought many souls to Christ, I will try the experiment of piling up into a mountain and then send down in an avalanche of power many of these gospel "comes." "Come thou and all thy house into the ark;" "Come unto Me, all ye who labor and are heavy laden, and I will give you rest;" "Come with us, and we will do you good;" "Come and see;" "The Spirit and the bride say 'come,' and let him that heareth say 'come,' and let him that is athirst 'come.'" The stroke of one bell in a tower may be sweet, but a score of bells well tuned and lightly lifted and skillfully swung in one great chime fill the heavens with music almost celestial. And no one who has heard the mighty chimes in the towers of Amsterdam or Ghent or Copenhagen can forget them. Now, it seems to me that in this Sabbath hour all heaven is chiming, and the voices of departed friends and kindred ring down the sky, saying, "Come!"

When Russia was in one of her great wars, the suffering of the soldiers had been long and bitter, and they were waiting for the end of the strife. One day a messenger in great excitement ran among the tents of the army shouting, "Peace! Peace!" The sentry on guard asked, "Who says peace?" And the sick soldier asked, "Who says peace?" And all up and down the encampment of the Russians went the question, "Who says 'peace'?" Then the messenger responded, "The Czar says 'peace.'" That was enough. That meant going home. That meant the war was over. No more wounds and no more long marches. So to-day, as one of the Lord's messengers, I move through these great encampments of souls and cry, "Peace between earth and heaven. Peace between God and man! Peace between your repenting soul and a Pardon Lord!" If you ask me, "Who says 'peace'?" I answer, "Christ our King declares it." "My peace I give unto you," says He who is of one with all understanding. Everlasting peace!