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The Editor is always glad to receive for examination illustrated articles on subjects of timely interest. If the photographs are sharp, the articles short, and the facts authentic, the contributions will receive special attention. Accepted articles will be paid for at regular space rates.

## "GOD'S WILL BE DONE—NOT OURS."

For the third time in the history of this Republic we are called upon to endure the unspeakable anguish of seeing a beloved President stricken in our midst by the hand of the assassin.

Lincoln! Garfield! and now McKinley! Surely the cup of our national sorrow has been filled to the brim.

It will not be given to many of us to look again upon the face of our martyred President; nor need we. In affectionate and reverent memory we shall carry the image of that face—so dignified, grave, gentle and sincere—and, carrying it with us, we shall realize with tender sorrow that there has passed out from our midst a leader, truly wise and great; one of whom posterity will repeat that his record is chronicled not less in the deep, personal love of his people, than in the lofty purpose and spotless integrity of his official life.

Particular pathos will always attach to this tragic event from the fact that it could scarcely have happened if the President had not so freely and trustfully mingled with the people, and exposed himself to that very form of death to which he fell a victim. "Of the people, by the people, for the people"—only once, surely was there a President who, so assiduously and with such evident sincerity, sought to keep in personal touch with the citizens of the workaday world. The promiscuous handshaking with the Chief Executive, for which no parallel exists in any other country, affords an unrivaled opportunity for the stroke of the assassin. In no other country would it be allowed, or, if allowed, be possible. To the American people, however, this custom is the expression of one of the most cherished traditions of their national life; and the fact, truly pathetic, that our beloved President has died a martyr to his zealous fidelity to this national observance will give an added luster to his memory, which will brighten with the lapse of years.

Alas! what more shall we say of him. As we look upon that poor, stricken form, we feel that to indulge in wordy panegyric would be to trifle with a sacred theme. To say that he was statesmanlike, sagacious, patient, broad-minded, conscientious, lovable, and supremely patriotic—in a word a Christian and an American—and that his character was rounded out by an unaffected and all-pervading humility, is to summarize but a few of the public and private virtues which will cause posterity to proclaim him, as we do now, one of the most illustrious and beloved Presidents on the roll of the American Republic.

For seven long days the American people have watched by the bedside of their President; and, now that the end has come, they join with him in those last words, so characteristic of the man: "God's will be done—not ours."

## PROPOSED REMODELING OF THE CROTON DAM.

The mere suggestion that there are serious defects in the design of the great Croton Dam will come as a surprise to those who are conversant with the history and character of this famous structure. The dam, although not the longest, is the loftiest in existence, and in all the history of similar structures there has been no parallel to the enormous amount of excavation which has been necessary before a reliable rock foundation could be secured. The greater part of the dam is of solid masonry construction, and its cross-section and the first-class nature of the work are such as to place its stability beyond the shadow of a doubt. Unfortunately, considerations of economy led to the construction of about 400 feet of the dam on a system which, while it was favorable as to cost, was, to say the least, doubtful as to stability and per-

manence. The solid masonry structure gives place, on the southerly 400 feet of the dam, to an earthen embankment with a thin, vertical, masonry, diaphragm in its center. While many earthen dams of this character have been built and are giving good service, there is no record of the system being used on a work of the great size and importance of the Croton Dam. Moreover, it is considered that the abrupt transition from the solid masonry to the composite structure introduces elements of risk which might lead to ultimate failure. The engineer in charge of the work, in recommending to the commissioners that an expert board of engineers be appointed to examine the dam, and report upon the desirability of carrying the masonry structure entirely across the valley, is evidently prompted by the same misgivings which many engineers have felt regarding the dual system of construction ever since the plans were first made public; and we are of the opinion that the consequence of failure in the way of a water famine would be so serious a matter to New York city, that the few months' delay, and the increased expenditure of half a million dollars involved in the requested change, should not be allowed to stand in the way for one moment. The expert commission consists of three well-known engineers, and is presided over by Mr. J. J. R. Croes, president of the American Society of Civil Engineers. The findings of this body will certainly be awaited with no little interest by those who realize the vast interests which are at stake in the present discussion.

## A GREAT SALVAGE FEAT.

The recent arrival and departure from this port of the American Line steamship "Philadelphia" marks the successful climax of a feat of salvage which is in many respects the most remarkable ever achieved. It will be remembered that two years ago the steamship "Paris," while on her way from Cherbourg to New York, ran upon the dangerous submerged rocks on the south coast of England known as the "Manacles," where she remained, hard and fast, and exposed to the full fury of the Atlantic storms for a period of several months. She was finally floated by a German salvage company and towed to the shipyards of Harland & Wolff at Belfast. The constant pounding on the rocks destroyed a large section of her double bottom, and it was decided that the repairs should include a thorough reconstruction of the vessel. Advantage was taken of the opportunity to give her a complete set of new engines and boilers, besides thoroughly overhauling and renovating the ship from stem to stern. The external appearance of the "Philadelphia," as she is now named, is changed by the substitution of two smokestacks in place of the three she formerly carried. The stern also has been remodeled and considerably widened in the region of the propellers, so as to bring the latter entirely inboard.

The underwater changes consisted of the thorough reconstruction of the double bottom, the insertion of new keel, bilges, and frames where required, and the carrying out of the plating of the hull around the propeller shafts so as to form complete tunnel ways extending to the boss of the propellers. Quadruple-expansion engines have taken the place of the old triple-expansion, and a complete battery of new boilers has been installed. The present horse power of the vessel is 20,000, as against the old indicated horse power of 18,000, and when the engines have worn down to their bearings it is intended to drive the vessel at a sustained sea speed of 21 knots an hour. The best day's run on her maiden trip, when the engines were not pushed, was 19.9 knots an hour. The first and second cabins have been decorated with hardwood and embossed leather, and the removal of one of the three smokestacks and other structural changes have increased the passenger accommodation, and have brought the "Paris" up to the full pitch of excellence of a modern, first-class transatlantic liner. Those who saw this handsome vessel steaming down the harbor found it difficult to realize that only two years ago she was lying an apparently hopeless wreck upon the rocks of the English coast.

## CANAIGRE GROWING IN THE UNITED STATES.

There is every indication that the world's supply of tannin is destined shortly to be derived from a new source. The substances which are used comprise mostly oak and hemlock barks, gambier, sumac and their extracts. Last year 136,284 tons of tannin material were consumed in England alone, while in the United States the consumption was about 1,500,000 tons. With the increase in the demand for leather, the accessible supply of tanning substances has not kept pace, and both practical tanners and men of science have been searching not only the vegetable kingdom, but also the domain of chemistry, to discover new ways of producing tannic acid. This has at last been discovered in canaigre (*Rumex hymenosepalus*). Canaigre is a corruption of "cana agria,"

or sour cane, by which the plant is known to the Mexicans. The plant is an annual, being planted and harvested in the crop form, and is, therefore, not subjected to slow growth as a tree. It is a bulb or tuber akin to the potato or dahlia, growing under cover of the earth and sending up a stalk and mass of leaves to a height of from 15 inches to 3 feet above the surface. It is a remarkable root in appearance, and it is indigenous to the arid plains of New Mexico, Arizona and California. The Agricultural Department in 1878 analyzed the root and noted its large percentage of tannic acid. This resulted in the shipment of a quantity of the roots to Germany. It was found that they arrived in more or less fermented and spoiled condition. Subsequently the roots were sliced and dried, and they now reach their destination abroad in excellent condition. In time the shipment amounted to 800 carloads. The roots contain 35 per cent of tannic acid.

The next step was to extract the tannic acid from the roots and ship the extract instead of the roots. Canaigre is now regularly cultivated, and in the current number of our SUPPLEMENT will be found a most interesting illustrated description, showing the roots in cultivation and the gathering of the wild canaigre. The article is from the pen of Mr. J. E. Bennett.

## RAPID DEVELOPMENT OF WIRELESS TELEGRAPHY.

The recent successful transmission of wireless messages to and from the steamship "Lucania" when she was yet 200 miles from the port of New York, brought home vividly to the people of this city the fact, perhaps too little recognized, that the new system is commercially a marked success and a decided contribution to the safety and convenience of modern ocean travel.

The history of practical wireless telegraphy commenced, as far as this country is concerned, with the International Yacht Races of 1899, when, thanks to the enterprise of The New York Herald, the hourly position of the yachts was reported from the race-course off Sandy Hook to this city, and forwarded thence throughout the whole world. The necessary apparatus was fitted on board the steamer "Grande Duchesse," and the messages transmitted from the vessel were taken up by the wireless station on Navesink Highlands, whence they were sent over the ordinary telegraph wires to the office of the Herald. No application of wireless telegraphy of any great importance had been made in this country since 1899 until the recent installing, under the same auspices, of a station on the Nantucket Shoals lightship for the purpose of communicating with incoming ocean steamers. The Nantucket lightship is stationed about 40 miles south from Siasconset on the island of Nantucket. At the highest point in the village is a mast which carries 180 feet of vertical wire, the receiving and transmitting instruments being located in a cottage near the base of the mast. Aboard the lightship is a vertical wire 106 feet in length and the necessary instruments to complete the installation. With this apparatus it was found possible to communicate with the steamship "Lucania" when that vessel was 72 miles east of Nantucket, and within half an hour after the lightship was in touch with the vessel the ship was able to communicate with New York city, the distance from the "Lucania" to her destination being then approximately 200 miles. For several hours messages were exchanged between New York and the passengers on the ship, who were able to obtain a summary of events which had happened since the ship received its last wireless communication from the Irish coast at the commencement of the voyage. The successful carrying out of this experiment has the immediate result of lessening by more than half a day the period of time during which a transatlantic steamer is cut off from communication with the outside world.

Considering its revolutionary character, the success of wireless telegraphy has been unusually rapid, for it was only as recently as the summer of 1896 that Marconi, then but twenty-two years of age, landed in England in the hope of interesting the government in his invention and having an opportunity to demonstrate on a large scale its practical value. Thanks to the instant appreciation and encouragement of some of the leading electrical experts of that country, Marconi was able to make the necessary experiments on a large scale, and in the year 1898 he succeeded in dispatching a message over a distance of 34 miles between two points in England. It was not until March of the following year, when Marconi established communication across the English Channel, that the new system attracted the attention of the world at large and demonstrated its great commercial possibilities. Subsequent developments have included the successful transmission of messages between warships at sea and between merchant vessels and the shore; while the range of the system has grown so rapidly that in June of this year messages were exchanged between two stations in England which were 223 miles apart. Although