

### ORIGIN OF LEAK IN THE DRY DOCK, BROOKLYN NAVY YARD.

Recent developments in the investigation of the leaking dry dock at the Brooklyn Navy Yard have turned the attention of the engineers in an entirely new direction in their search for the exact location of the leak. There is now good reason to believe that, whatever seepage may be taking place from the old timber basin and buried cribs on the northern side of the dock, the bulk of the water is passing into the dock beneath the apron which extends from the outer sill into the entrance channel. This is rendered probable by the behavior of the water when the dock was pumped dry for examination, and several of the altar timbers on the north side were wrenched from their seating by the great hydraulic pressure and thrown into the dock. The sudden relief thus presented allowed all the water behind the altars to empty itself into the dock, and it was noticed that not only did the larger leaks on the north side stop running, but the streams of water were lowered on all sides of the dock at once, thus proving that the bulk of the water came from some particular quarter in the vicinity of the entrance.

A diver was sent down to examine the apron on the outside of the caisson gate, and he found that a hole had been torn open at the outer edge of the apron, exposing the underlying bed of concrete, and that a large hole had been formed in the bottom mud of the channel around the damaged structure.

By referring to the accompanying diagram it will be seen that the dock could not have been damaged in a more vital spot. The cut represents a sectional view of the entrance to the dock and shows the manner of finishing off the structure to a connection with the natural mud bottom of the entrance channel. The foundation of the apron is somewhat similar to that of the whole floor of the dock. It is carried on piles which are capped with 12 inch by 12 inch timbers. A solid bed of concrete from 3½ to 5 feet in thickness is worked in around the heads of the piles and finished off flush with the top of the caps. The flooring of the apron consists of two layers of 6 by 12 inch timbers laid to break joints, the outer edge of the floor being flush with the cap of the outer line of piles. A wall of 8 by 12 inch sheet piling is driven across the entrance in snug contact with the edge of the apron, each pile being bolted to a 12 by 12 stringer on top of the apron.

The construction of the dock was carried on from the inshore end toward the channel, and the apron was built while there was yet a couple of hundred feet of solid ground between it and the Wallabout channel. The removal of this material was done by a floating steam dredge, and it is supposed that, in excavating the channel near the apron, the bucket caught the edge of the apron, tearing up the sheet piling and breaking away a portion of the concrete and the timber flooring. The water was now free to enter beneath the concrete floor and work its way along the sides of the dock. Under the great head of from 26 to 29 feet, the pressure upon the structure would be enormous, and would easily account for the bursting in of the walls on the occasion already referred to.

If, as is reasonably supposed, this is the cause of the leak, the dock can be rendered serviceable for a much smaller sum of money than has been named in the daily press, even if it should be necessary to go to the expense of building a temporary dam across the mouth of the entrance channel.

#### The New Supplement Catalogue.

The publishers of the SCIENTIFIC AMERICAN announce they have now ready for distribution an entirely new catalogue of valuable papers of the SCIENTIFIC AMERICAN SUPPLEMENT. There has been no catalogue of the SUPPLEMENT since 1891. Since that time so many important papers have been published that the need of a new catalogue was urgent. The present catalogue includes all of the most important papers from 1876 to date. Many subjects of the utmost importance have been published in the SUPPLEMENT which have not as yet any literature in book form. This renders the back numbers of the SUPPLEMENT particularly desirable to the technical library. The very latest discoveries, such as acetylene gas, argon, helium, Roentgen rays, etc., are fully treated. The catalogue now includes about 12,000 entries and consists of 48 pages.

As the SUPPLEMENTS are kept in print at a considerable expense, it is to be hoped our readers will not hesitate to purchase a series of SUPPLEMENTS when they desire information, as the cost is very low. The catalogue is sent free to anyone on request.

It is reported that Dr. Nansen has purchased a yacht with auxiliary steam power for use in scientific researches during the summer. The yacht is of 37 tons measurement and will sail shortly for Norway.

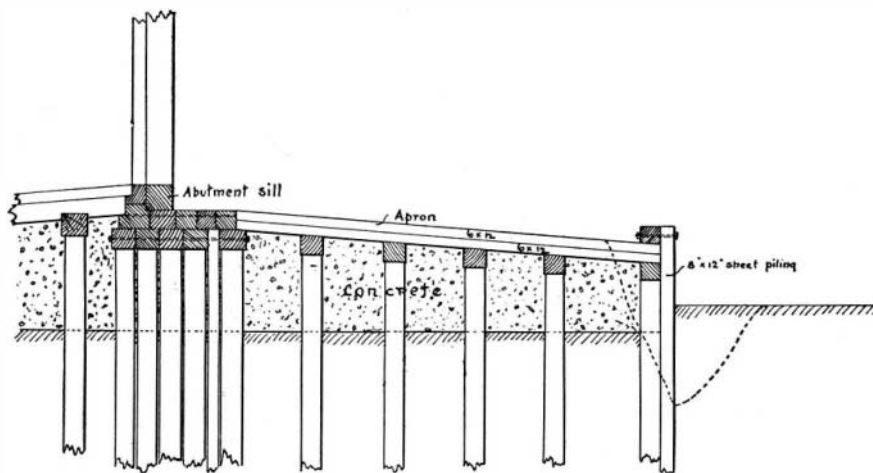
#### Americans Who Toil.

A bulletin of the eleventh census just furnished shows that the total number of people engaged in occupations of all kinds in 1890 was 22,735,661—an increase of over 5,000,000 working people in a decade. This whole number of working people consists of those ten years old and over and makes up over 36 per cent of the entire population and almost 47 per cent of all persons ten years old and over. Of the whole number of working people, the females form 17.22 per cent.

Divided by classes, the working people of the country are as follows: Agriculture, fisheries and mining, 9,031,336; professional, 944,333; domestic and personal service, 4,360,577; trade and transportation, 326,122; manufacturing and mechanical industries, 5,091,293. The domestic and personal service includes hotel-keepers, soldiers, sailors, and marines, laborers, barbers, detectives, etc. The first named class is a 10-year gain of over 1,000,000, or of almost 3,000,000 for a score of years.

Considerably more than four-fifths of the illiterate male population of the country and over one-fourth of the illiterate female population are working. Over 59 per cent of the working men are married, over 37 per cent single, over 3 per cent widowed and one-quarter of 1 per cent divorced. Of all foreign whites at work here, 14 per cent of the males and 13 per cent of the females cannot speak English. Of this 8½ per cent employed in domestic and personal service, cannot speak English, and almost 5 per cent in the manufacturing and mechanical industries. Manufacturing and mechanics embrace the largest number of females who cannot speak English—over 4 per cent—with domestic service a close second.

In manufacturing and mechanics, the carpenters and joiners number 611,482 and make up the greatest element, with dressmakers and milliners following, with 499,690. There are a little over 1,000,000 book-keepers, clerks and salesmen, 690,658 merchants and



SECTIONAL VIEW OF APRON AT ENTRANCE TO DOCK NO. 3.

Dotted lines show damaged portion of apron and hole washed out in mud bottom.

dealers, 5,281 agricultural laborers, 349,952 miners, and only a little over 60,000 fishermen and oystermen.

Professors and teachers aggregating 347,344 form the most numerous of the professional classes. Physicians and surgeons, with 104,805, come next, then lawyers, 89,630; clergymen, 86,203; government officials, 70,664; musicians, etc., 62,155; engineers and surveyors, 42,239; artists and art teachers, 22,496; journalists, 21,849; and actors, 9,728.

#### The Air of Bedrooms.

When there is too much water in the atmosphere, the person who breathes it is to a certain limited extent deprived of his due supply of oxygen, and an elementary beginning of suffocation is perceived in his chest, says the Hospital. Most middle-aged and all old persons have felt this; and all persons also who have weak hearts or impaired lungs. Now the air of bedrooms is exceedingly liable to be overcharged with watery vapor. The most obvious reasons for this are that many bedrooms are never warmed with fires, and that their windows are often left open all day until dusk, and sometimes even to the very hour of going to bed. Let us think of some of the consequences of going to bed in very damp air. A delicate or an aged person leaves a warm drawing room, say, at half past eleven, a drawing room in which there was a temperature of 68 degrees; he enters a cold, damp bedroom, say at a temperature of 38 degrees. The air in the drawing room was dry, perhaps a little too dry. The air in the bedroom is saturated with cold, watery vapor. The person we are thinking of, so soon as he enters the bedroom, chokes and gasps and coughs for half an hour at least, and sometimes brings on such an attack of asthma, or as he calls it "stuffiness" of the chest, that he can hardly breathe at all. He may even lose his night's sleep, and be ill for some days after such an exposure. Now, common sense says, "Make an effort to bring the atmosphere of the bedroom nearer in point both of dryness and warmth to the atmosphere of the drawing room; and then not only

will a man feel as comfortable in the bedroom as in the drawing room, but even more comfortable. He will neither gasp, nor choke, nor cough, but will go to sleep with ease and comfort." Common sense teaches some people all this. But to those who have no special regard for common sense Science tells the same tale, and she speaks with a voice whose authority not even the most learned will question.—Hospital.

#### Livingstone's Grave at Old Chitambo.

Mr. Poulett Weatherley, an Englishman who has been for several years traveling in a leisurely manner in Central Africa, has recently explored Lake Bangweolo, and afterward visited Old Chitambo, where Livingstone's heart was buried. In a letter written to a friend at Zomba and published in the British Central Africa Gazette, Mr. Weatherley says: "I send you some leaves from a long way off—i. e., Livingstone's tree at Old Chitambo. After circumnavigating the lake I thought it a pity to leave the district without seeing Chitambo, so I trudged around the south of Bangweolo to the spot, crossing the Luapula about ten miles below Katapa, at a place called Kafufwe, where Glave crossed. From that point to the Mpundu tree I traveled his track. Neither the chief Chitambo nor the village of that name of Livingstone's day now exists. Chitambo, the late chief, lies on the south side of and under the same tree as Livingstone's heart, which is buried to the north of it. The village has been removed about ten miles to the west. The solitude of the spot is rather depressing, and I was rather glad to get away. The idea that the whole country to the south of the lake is nothing but a vast swamp is incorrect. There is certainly plenty of swamp, but also miles and miles of beautifully wooded country. Game there is but little of, as far as antelopes are concerned, the rinderpest having killed off nearly all. Elephants come out of the swamp during the rains, but when they come I hope to be elsewhere. I com-

mence my return journey, via Mshot's, the day after to-morrow. I have taken photographs of the tree at Old Chitambo and one of the inscription. It is a thousand pities that some attempt is not made by people at home, who are interested in Livingstone and his work in Africa, to prevent the exact spot where he died from being hopelessly lost sight of, as it will be in a very few years. When the poor old Mpundu tree falls through fire and decay—it is now fast becoming a mere shell—after having kept guard so faithfully all these years—a quarter of a century now—there is nothing to replace it. Nothing could possibly be more appropriate than the simple rugged tree standing over the spot—no monument could be more inexpressibly solemn—but unfortunately it cannot last for ever. The Mpundu must go, and with it, unless prompt steps be taken, goes the knowledge of the site of Livingstone's last halting place. To me his grave in the Abbey is nothing to the Mpundu tree at Old Chitambo. The stream, on the right bank of which Livingstone died, is the Luwe."

#### The Uses of Fruit.

Of all the classes of Nature's edible productions, that of fruit is most pleasing to the senses. That fruit alone will not sustain life for a prolonged period is true, but that the organic salts and acids of fruit are necessary to the maintenance of perfect health is equally correct. Prof. A. R. Elliot (Dietetic and Hygienic Gazette, November) summarizes the uses of fruit as follows:

1. To furnish variety to the diet.
2. To relieve thirst and introduce water into the system.
3. To furnish nutriment.
4. To supply organic salts essential to proper nutrition.
5. To stimulate the kidneys, increase the flow of urine and lower its acidity.
6. To act as laxatives.
7. To stimulate and improve appetite and digestion.
8. To act as antiscorbutics.

Concerning the mode of preparation, ripe fruits as a rule do not need to be cooked, and are much more palatable and equally nutritious in the uncooked state. The proper time to eat fruit is either at the beginning of the meal or between meals, when they aid digestion and exert the greater laxative effect. Taken at the completion of a meal, they dilute the gastric juice and tend to embarrass digestion.

MR. H. WILDE, president of the Manchester Scientific and Literary Society, has given the Paris Academy of Sciences the sum of \$27,000, to be used in giving an annual prize of \$800, for a discovery or publication in physical science, the prize to be international. Mr. Wilde states that this gift is made as a return for the benefit which he has derived from French science.