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(Illustrated articles are marked with an asterisk.)

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SCIENTIFIC AMERICAN SUPPLEMENT

No. 660.

For the Week Ending August 25, 1888.

Price 10 cents. For sale by all newsdealers.

SOME NEW FRENCH TORPEDO BOATS.

In the construction of the new French torpedo boats the principal faults of the earlier types seem to have been corrected in large degree. They have stability as well as speed, and are said to be of much simpler design, having more room below for the crew, more air, and less vibration, though, of course, there must always be a deal of this where powerful engines are worked within a light shell. L'Agile and l'Audacieux, fitted at La Seyne, near Toulon, under Admiral Krantz, have been maneuvering in the Channel, in rough water, too, and gave a fine account of themselves, making twenty knots an hour on an average of four hours' work under unfavorable as well as favorable conditions; running with and against the current, the wind being fairly abeam for the most part, and consequently a disadvantage. Each is 42 meters in extreme length, and good sized boats, intended, as may be guessed, for service on the open sea, outside roads and harbors; fitted each with three torpedoes, to be fired from submarine chambers at close range. Each has a battery of machine guns, with protective shields, thus enabling the crew to return the fire from the deck and tops of an enemy's ship against which they may be advancing.

The Coureur, recently tried at Cherbourg, was constructed in England after French designs and for the French navy. Under conditions not particularly favorable she made 26 knots an hour, and, remembering that her engines are not yet worn smooth by attrition, this must be regarded as an astonishing rate. The Coureur has two lance torpedoes to be fired in the subcurrent when the ship is brought up close aboard an enemy. The torpedo cruiser Wattignies, named after the great Carnot and now fairly complete, will soon be tried; great things being expected of her. With engines of 4,000 H. P., she is looked to to surpass all previous records of sea-going torpedo boats. She is built on the same lines as the Condor, being of 1,273 tons displacement, and is expected to keep out into the open sea; guarding the approaches to a port or intercepting an enemy even before he makes the land. She has light sides but heavily protected bows and deck to enable her to resist a stray shot as she comes up to deliver her torpedo—a formidable cigar-shaped torpedo; it is as sharp as an arrow, capable of carrying a large explosive force, and having a second and even a third one in reserve should the first not give the enemy his *coup de grace*. As may have been supposed, the Wattignies is a double-ender, having only to reverse her engines after delivering her blow. At the port of Lorient, two torpedo dispatch boats are being built, after much modified plans of the Bombe, which is of 321 tons, and, as will be remembered, capable of excellent work as a torpedo catcher, as was shown in last year's trials at Boulogne-sur-Mer.

COLLISION BETWEEN OCEAN STEAMERS.

Since the collision between the Celtic and Britannic, which was described at the time in these columns, no marine disaster has occurred of equal importance to that which we are now called upon to chronicle. Early in the morning of August 14, off Sable Island near Newfoundland, two steamers of the Thingvalla line plying between New York, Stettin, Christiania, and Copenhagen, collided. One had left New York three days before, the other was bound to the same port. The story of the occurrence recalls the Celtic-Britannic collision. Both ships were of the same line. Neither steamer saw the other until they were close together. Had they continued on a straight course, or had they both steered to starboard, they might have escaped. But they seemed to have put their helms in opposite directions, and the effect was that the Thingvalla headed for the Geiser. The engines were backed on both ships, but they could not check the headway which brought them together. The Thingvalla struck the Geiser almost amidships, cutting deeply into her side, and crushing in her own bow. As she backed away, the Geiser's crew made frantic efforts to lower the boats and set free a life raft. The boat capsized or drifted away, and the mast falling on the life raft destroyed it and crushed some of the men about it. In about five minutes the Geiser sank. A few of her passengers and crew were rescued, but about one hundred souls were lost.

The Thingvalla, whose boats had saved the few survivors, remained afloat. Her forward bulkhead kept out the water. She was far from secure, and her captain signaled for help. Some hours after the disaster the steamer Wieland answered the signals and took off about five hundred people, bringing them along with the news of the disaster to this port. The Thingvalla in charge of a small crew was headed to the west, and will probably make Halifax or St. Johns, N. F., as a harbor.

The scene on board of the Geiser is described as dreadful. A great hole was made in her deck, and the frightened passengers came rushing forward with such impetuosity that some of them plunged through it into the water. The escape of the second officer was a remarkable one. He was in his berth at the time, and the bow of the Thingvalla crushed through the ship's side, almost touching him. Her anchor chain, as her bow entered his stateroom, swung near him. With extraordinary presence of mind he grasped its links, and as the Thingvalla backed away she carried him with her through the Geiser's side. He climbed up the chain to her deck, and from that point saw the last struggles of his own ship.

A court of inquiry will be held, and efforts will be made to determine the reasons of the occurrence, and to fix the blame where it belongs. But little good will be done by this. The lesson of the disaster is one that has often been given, and as often has been practically unheeded. With such proved liability to collision, the ocean liners should be provided with more efficient apparatus, as well for the prevention of accidents as for the saving of life when the inevitable collision or sinking occurs.

Common boats proved, as they repeatedly have before, of little use. The one life raft of which mention was made was destroyed. The life preservers, of which it is said there were three for every soul on board, proved useless, as the panic-stricken passengers rushed on deck without them. The reversal of the engines of the ships was also useless, as their headway was practically unchecked. The few signals that were sounded before the accident were fruitless. Had the ships been supplied with marine brakes their progress would have been so quickly arrested that the disaster might have been averted.

As regards ocean traffic, the need of the day is evident. The management of the transatlantic lines have every motive to adopt improvements in life-saving devices, in improved signaling, and in aids to navigation. The question of expense should be secondary. The interruption to business and the injury to reputation that follow these disasters represent a loss that insurance does not cover. It seems as if due efforts in the direction of insuring safety at sea had not been made in the present instance, when the appliances of the sinking ship did nothing worthy of mention to save the life of her crew and passengers. The efforts of inventors to cover this ground should receive more than the usual encouragement. It is a question of saving life as well as property, and philanthropy and business in this are hand in hand. A ship should be able to define her course and rate of progress: she should be able to stop before a mile of water has been covered. Unsinkable and indestructible rafts should be on her deck, and life preservers should be easily adjustable and accessible.

SURE DEATH TO BUFFALO MOTHS.

A lady correspondent sends us the following: Take strips of red or blue flannel (as these colors are particularly attractive to them), dip in liquid arsenic and lay around the edges of carpets, or wherever the pests are troublesome. They will soon eat a desired amount and collapse, to the entire satisfaction of the housewife, without the least injury to her carpets.

The Temperature of Our Food and Drinks.

Of all nations, the American is the most in the habit of taking his food and drink at a temperature as remote as possible from that of the body. Ice-water drinking is a national habit, and ice cream is a national dish, predilection for which runs through all classes of society, and becomes a binding force in social and, we might add, scientific and religious gatherings. Americans should, therefore, take an interest in the experimental researches on the temperature of our food and drink made by certain foreign savants whose names are, as is usual, hyperplasic with consonants just in proportion to the rigidity of their science and the seriousness of their inquiries.

The temperature of our food and drinks was treated of by Von Spath and Kostjurin a year ago (*Munchener Medic. Wochenschr.*, 1886, p. 533), and more recently by Uffelmann, of Rostock (*Ibid.*, 1887, p. 999).

Professor Uffelmann reviews the work of his predecessors, and draws his conclusions partly from this and partly from his own experiments. They bear first upon the temperature of ingesta in health, and the rules laid down are:

1. That, in general, a temperature of food and drink which approaches that of the blood is most healthful. For nurslings such temperature is essential.

2. For quenching the thirst, the best temperature is from 50° F. to 68° F. The favorite American temperature is, as is well known, 32° F., and an issue is raised at once between Professor Uffelmann and the American nation.

3. The ingestion of very hot or very cold food or drink in health has a damaging effect, which is increased just in proportion to the rapidity with which the hot or cold substance is taken. Hence the gulping down of ice water or hot coffee, etc., means eventually, according to the light we are quoting, a mere ventral damnation. If a person takes a drink for the purpose of warming himself, as in cold weather, he can accomplish this by having the drink at a temperature of 116° to 120° F.

4. The use of very hot and cold substances, following or alternating, is injurious to the teeth. But the

taking of cold water lessens the injurious action of extremely hot substances upon the stomach.

5. Ingestion of cold food and drinks lessens the bodily temperature, whether it be normal or febrile.

6. Cold fluids lessen the hyperirritability of the stomach.

Cold ingesta raise the tone of the stomach, increase peristalsis, and promote movement of the bowels. Cold food and drinks increase the tendency to cough, according to Uffelmann, by causing reflexly a congestion of the bronchial vessels. Hence, persons with bronchial disease ought not to indulge in cold drinks. It is, however, a common custom to give persons who suffer from pulmonary hemorrhage ice to swallow; and, according to the view stated, this would be an injurious practice.

Hot food and drinks stimulate the stomach more than cold. But after repeated use they lessen the tonus of the digestive tract, and cause congestion and dyspepsia. This condition has been observed after the so-called hot water cure. Hot drinks tend to lessen bronchial irritation, and this is one cause, possibly, of the success in some cases of the hot water treatment of consumption.—*Medical Record.*

Mineral Resources of the United States, 1887.

From advance sheets of the volume of Mineral Resources of the United States for 1887, by Prof. David T. Day, we take the following statistics:

Metallic Products of the United States in 1887.

	Quantity.	Value.
Pig iron, spot value.....long tons..	6,417,148	$121,925,800
Silver, coining value.....troy ounces..	41,269,240	53,441,300
Gold, coining value ..... "	1,596,500	33,100,000
Copper, value at New York City...pounds..	184,670,524	21,052,440
Lead, value at New York City...short tons..	160,700	14,463,000
Zinc, value at New York City. "	50,340	4,782,300
Quicksilver, value at San Francisco.....flasks..	33,825	1,429,000
Nickel, value at Philadelphia.....pounds..	205,556	133.200
Aluminum contained in alloys.....	.....	74,905
Antimony, value at San Francisco.....short tons..	75	15,500
Platinum, value (crude) at New York City.....troy ounces..	448	1,838
Total.....	.....	$250,419.283

Non-Metallic Mineral Products of the United States in 1887 *(spot values).*

	Quantity.	Value.
Bituminous coal.....long tons..	78,426,214	$97,939.656
Pennsylvania anthracite..... "	37,578,747	84,552,181
Building stone.....	.....	25,000,000
Lime .....barrels..	46,750,000	23.375.000
Petroleum..... "	28,249,543	16,949,726
Natural gas.....	.....	13,582.500
Cement.....barrels..	6,692,744	5,186,877
Salt ..... "	7,831,962	4,093,846
Limestone for iron flux.....long tons..	5,377,000	3,226,200
South Carolina phosphate rock.. "	480.558	1,836,818
Zinc white .....short tons..	18,000	1,440,000
Mineral waters.....gallons sold..	8,259,609	1,261,473
Borax.....pounds	11,000,000	550,000
Gypsum.....short tons..	95.000	425.000
Manganese ore .....long tons..	34,524	333,844
Mineral paints..... "	20,000	310,000
New Jersey marls.....short tons..	600,000	300,000
Pyrites.....long tons..	52,500	210,000
Flint ..... "	32,000	185,000
Mica.....pounds..	70,500	142,250
Corundum.....short tons..	600	108,000
Sulphur..... "	3,000	100,000
Precious stones.....	.....	88,600
Crude barytes.....long tons..	15,000	75,000
Gold quartz, souvenirs, jewelry, etc.....	.....	75,000
Bromine.....pounds..	199,087	61,717
Feldspar.....long tons...	10,200	56,100
Chrome iron ore ..... "	3,000	40,000
Graphite .....pounds..	416,000	34,000
Fluorspar.....short tons..	5,000	20,000
Slate, ground as pigment.....long tons..	2,000	20.000
Cobalt oxide.....pounds..	18,340	18,774
Novaculite ..... "	1,200,000	16,000
Asphaltum.....short tons..	4,000	16,000
Asbestos..... "	150	4,500
Rutile.....pounds..	1,000	3,000
Total.....	.....	$281,637,062

Résumé of the Values of the Metallic and Non-Metallic Mineral Substances Produced in the United States in 1887.

Metals.....	$250,419.283
Mineral substances named in the foregoing table..	281,637.062
	$532,056,345
Estimated value of mineral products unspecified.....	6,000,000
Grand total.....	$538,056,345

Buckthorn in Toothache.

Dr. Gretchinsky has called attention to a practice which obtains among the peasantry in some parts of Southern Russia of treating toothache with a gargle of decoction of buckthorn—*Rhamus catharticus.* He states that in order to test the ground for this practice, he made a series of control experiments upon a number of inmates of the local prison who were suffering from toothache. The patients were ordered to gargle their mouths with the cooled decoction every three or five minutes until the pain disappeared, and in every case the suffering ceased in about half an hour, though there still remained a vague aching or kind of itching about the teeth. A prolonged anodyne effect was produced by inserting a cotton wool plug steeped in the decoction in the cavity of a hollow tooth. Dr. Gretchinsky considers his experiments proved decoction of buckthorn to be a reliable means for mitigating such dental pain as depends upon inflammation of the pulp. He recommends the decoction to be made by boiling 100 parts of the bark in water sufficient to yield 200 parts of the strained liquid and adding 10 parts of brandy. Another writer attributes the anodyne action to the powerful astringent properties of the decoction.—*Pharm. Jour.*

PHOTOGRAPHIC NOTES.

Blocking Out Negatives.—Mr. T. N. Armstrong, in the *British Journal of Photography*, says one of the best ways to block out the sky of a negative is to coat the glass side with a film of ground glass varnish, then after this is perfectly dry rub over it powdered black lead or graphite with a bit of soft kid. Any degree of density is readily obtained, and natural clouds in the sky of the negative may be easily strengthened.

Hydroquinone.—According to Leslie J. Montifiore in the same journal, hydroquinone, which has lately come into prominence as a developer for dry plates, is now manufactured very cheaply from coal instead of the cinchona.

Restoring Faded Albumen Prints.—H. Zandaureck recommends the following process, which we take from the *British Journal of Photography.* The faded and yellow print is well washed and then immersed in—

No. 1.

TONING BATH.

A	Distilled water	5000 c. c.
	Tungstate of soda	100 grms.
B	Distilled water	400 c. c.
	Chemically pure carbonate of lime	4 grms.
	Chloride of lime	1 grm.
	Chloride of gold and soda	4 grms.

Mix in a yellow glass bottle and shake well, let it stand twenty-four hours, then filter into another yellow glass bottle, which should be well corked.

For about a sheet of albumenized paper, take of solution A 150 c. c. and of solution B, 4 to 8 c. c. Then place the prints one by one into this bath.

About ten minutes is required for toning, especially if the bath is warm.

It is a good plan to have an excess of gold in the bath. It is said to give good purple tones.

No. 2.

FIXING BATH.

Solution A	150 c. c.
Hyposulphite of soda	15 grms.

The prints are carefully washed and placed one by one in the fixing bath, where they are left until their yellow color has entirely disappeared, which usually takes from three to five hours. After fixing wash carefully.

How to Tell whether a Sensitive Plate has been Exposed.—It happens sometimes that photographers forget to make a note of their exposures, and are uncertain whether plates have been exposed or not. Professor Karl Klauser, in the Philadelphia *Photographer*, gives the following simple directions:

Immerse the corner of the plate which you suppose to have received the greatest light, as, for example, the sky in a landscape, slantingly in a strong developer for an inch, or more for larger plates.

After a minute you will know if the plate has been exposed by faint traces of the sky, etc. In that case, proceed to develop your plate in the ordinary manner.

If no image will show, return the plate to the plate holder after having dried off the corner which you had immersed in the developer, with some blotting paper. The plate was not exposed at all, or else under-exposed. If impressed by too short exposure, a second exposure of longer duration will very clearly obliterate the first, especially of landscape work in shady places.

Photographing Interiors.—M. Victor Angerer, a celebrated Viennese operator, had to photograph a *salon* in Rothschild's palace. Independently of the difficulty imported by contrasts between the colors of the hangings, the furniture, and so on, another condition complicated the operation. The lens faced two windows in a circular wall, both admitting daylight. One of the windows was directly in front of the lens, and through it could be seen the church of Saint Charles.

M. Angerer solved the problem of producing his negative without solarization, and behold how:

He focused perfectly in full light, then he pasted black paper over the troublesome window, and he closed the second or lateral one by means of a double curtain, which permitted but little light to enter. The other windows in the *salon* gave the necessary light, but M. Angerer pasted white tissue paper over them to diffuse it. He then exposed in the camera a dry plate for "a day and a half," after having placed a minute stop in the lens. At the end of this time he supposed the plate to be overexposed, and he capped the lens. He then opened the curtains of the lateral window in the circular wall, after which he gave another exposure, but of fifteen seconds only, the same plate being still in the camera. He again capped the lens, and removed the paper from the front window, then he exposed the same plate once more, but for four seconds only. The effect was surprising. There was no trace of solarization, all was perfectly harmonious, and a special charm was given to the photograph by a sharply reproduced view of the church of St. Charles outside the embarassing window.—*British Journal of Photography.*

[NATURE.]

The Tarpon or Silver King (Megalops thrissoides).

The genus Megalops belongs to the family Clupeidæ, and, among other features, is characterized, according to Dr. Gunther,* by an oblong compressed body, the presence of a narrow osseous lamella attached to the mandibular symphysis and lying between the halves of the mandible. Further, the latter is prominent, the intermaxillary short, the maxillary forming the lateral part of the mouth. There are bands of villiform teeth on the jaws, vomer, palatines, pterygoid, tongue, and base of skull.

The interest in the species above mentioned has been considerably increased of late by the fact that the huge fish (between 5 and 6 feet in length, and weighing from 90 to 150 pounds) can be caught by rod and line, and I am much indebted to Lady Playfair for giving me all the information she had obtained on the subject through her father and Mr. W. G. Russell, of Boston, United States.

The tarpon (*Megalops thrissoides*) frequents the Atlantic shores of North America, and is especially found "on the western or Gulf coast of Southern Florida, haunting the shallow bays and creeks inside the bars and keys which stretch along that coast; and the fishes are supposed to enter by the passes from the outer Gulf.†

"In shape the tarpon somewhat resembles the salmon, but, as becomes one of the herring tribe, it is deeper and less rounded, and the head is larger, the scales (cycloid) are thick and large, more than an inch in diameter" (a fine scale sent by Lady Playfair measures 2¼ inches both in antero-posterior and transverse diameter), "and the exposed portion is of a bright silvery hue, indeed it looks as if it had been dipped in silver and burnished; hence the name 'silver king.' I have seen specimens weighing from 50 to 137 pounds, and have heard of none above 150 pounds.

"The tarpon has always been upon the Gulf coast, but was formerly captured, as the sword-fish is, by the harpoon. In 1885, however, a Mr. Wood undertook successfully to secure the fish by rod and reel. . . About 150 have been caught in this manner during the seasons 1885 and 1886, the time being in March and April, perhaps a little earlier in a warm season; after April it is too hot for fishing.

"The fish is caught on the edge of the channels in 15 to 25 feet of water with a bait of (half a) mullet. The rod should be very stiff, not more than 9 feet in length, such as is used for large sea bass, and the line strong, but fine enough to carry 200 to 250 yards on the reel, which must therefore be large and heavy. A snood or gauging of about 3 feet of cod line, copper wire, or chain should be fixed to the hook,‡ as the dental apparatus of the fish efficiently combines a file and shears, with which even a double cod line may be frayed or worn off, or severed without a sensible strain.

"The tarpon takes the bait lying on the bottom, and moves off, swallowing it, until he is struck, and the moment he feels the hook he is out of the water, perhaps 3 or 6 feet in the air, shaking his head fiercely—as does the black bass—to disengage the hook, and then begins such a fight as, I believe, no other game fish ever shows. It frequently leaps with a clean breach twenty times before the game is over, and so close that it occasionally sends a douche over the boatmen; while in one instance a large one made a run of 100 yards, the whole of which was a succession of frantic leaps and plunges, leaving a wake like that of a steamer. The same fish towed my boat, with three men in it, about two miles, and, after more than an hour's hard fight, ended by three huge leaps out of the water among some mangrove trees, the oysters on the roots of which cut my line, so that we parted company after a close and protracted intimacy."

There is little doubt, from the foregoing remarks, that the splendid sport of tarpon fishing must make it most fascinating. In April, 1887, indeed, a single rod caught nine fish in eleven days, two of them weighing respectively 151 and 149 pounds, and in length 6 feet 4 inches and 6 feet 5 inches. These were taken at Punta Rassa on the western coast of Florida, the total weight of the catch being 1,042 pounds, or an average of about 116 pounds for each. The tarpon, like others of its tribe, has the advantage also of being good food.

W. C. MCINTOSH.

Indians Shoot at the Moon.

Four thousand blanketed Comanches, Kiowas, Cheyennes, Arapahoe, and Delawares were at the Anakee agency to get their rations when the recent total eclipse of the moon occurred. The savages were greatly excited. The principal chief ordered them to shoot at the "evil thing," and the force of Indians opened fire in the air, keeping up the shooting for upward of an hour, and until they were out of ammunition. When the moon appeared in view after the eclipse, wild whoops went up for what they believed to be their victory.

* "Introduction to Fishes," pp. 661-62.

† Extracted from a description (from personal observation) by Mr. W. G. Russell, of Boston.

‡ Described elsewhere as "an O'Shaughnessy knobbed 10-0 hook."