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WEEKLY.

THE SPONGE FISHERIES OF THE BAHAMAS.

BY J. F. COONLEY.

The sponge fisheries of the Bahamas cover a large extent of territory, give employment to about six thousand men and boys, and are a source of revenue to the colony larger than any other industry pursued there. There are no seasons of the year but sponges may be taken, and are taken, by the men engaged in the pursuit. Sponges are always plenty at one place or another around these islands. They are always growing, and the supply is never short if they are sought for in the right localities. There is also always a lively demand for good sponges, and at prices that are not liable to change materially from year to year. The quantity shipped from these islands during the year 1890 was 623,317 pounds, the local value of which amounted to $31,500. I have often asked this question: What becomes of all the sponges? The immense quantities sent from here seem more than enough to supply the world, yet outside of the sponge-producing region we see very few, if any, going to waste. Whatever becomes of them, the demand is about the same from year to year, the supply never fails, and prices maintain a very even scale.

There are about 550 schooners and sloops of from 5 to 20 tons and about 2,500 open boats engaged in the

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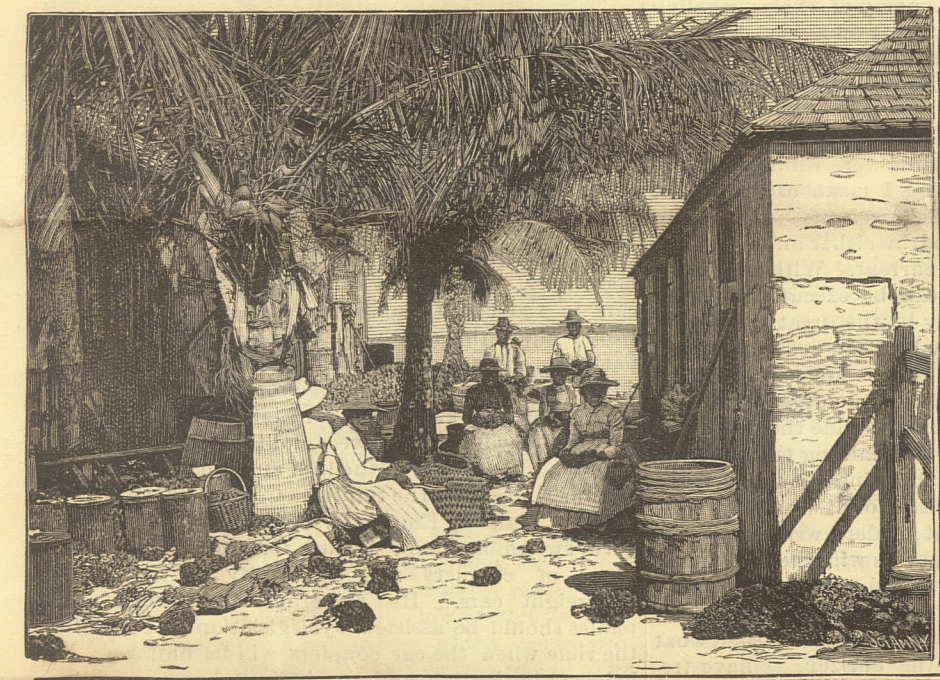
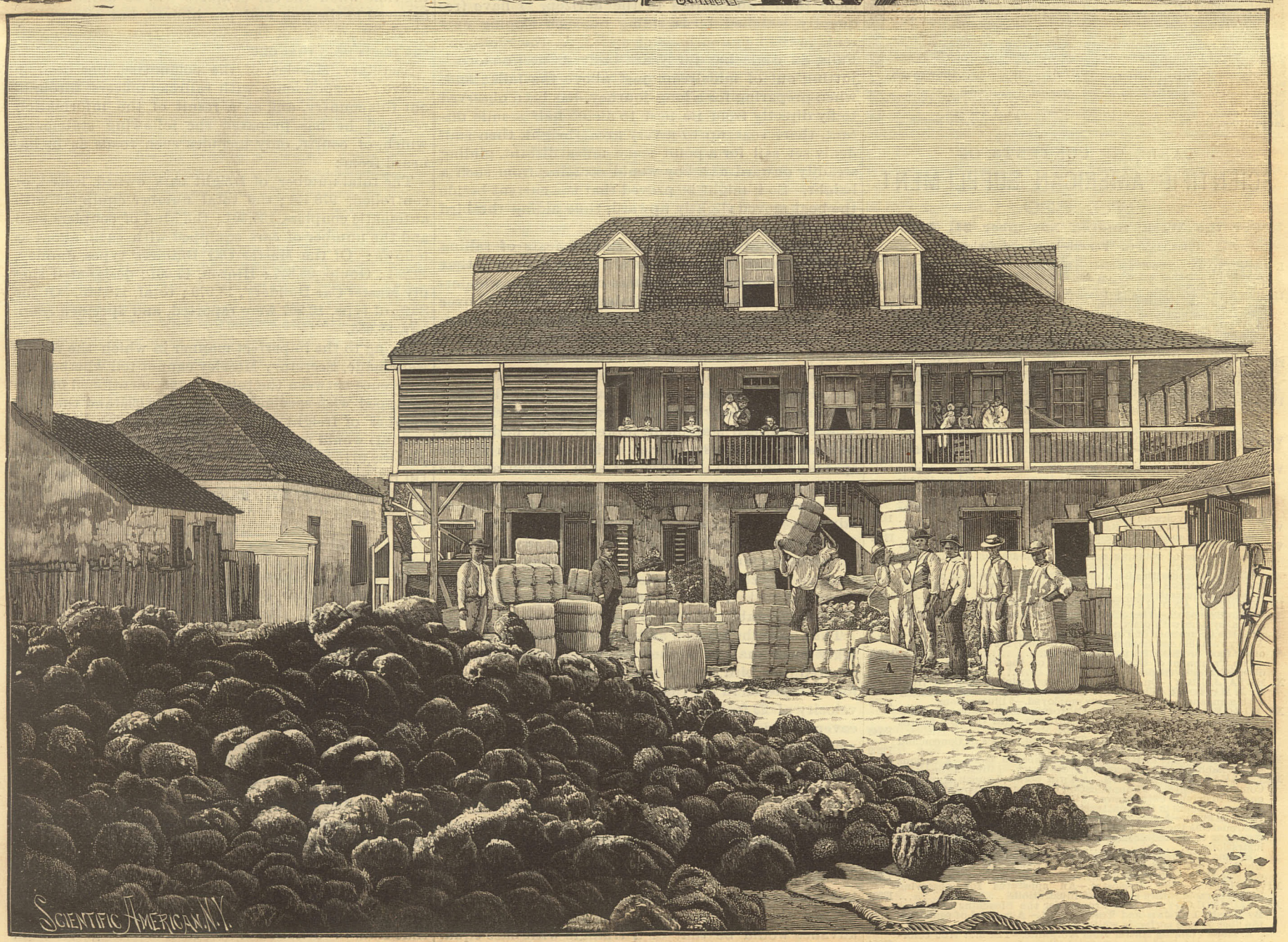


TRIMMING SPONGES.

PACKING SPONGES IN A SPONGE YARD.



DRYING AND BALING SPONGES.

THE SPONGE FISHERIES OF THE BAHAMAS.

THE SPONGE FISHERIES OF THE BAHAMAS.

(*Continued from first page.*)

fisheries, giving constant employment to the 6,000 men and boys engaged. These employes are all colored, mostly natives of the islands, and follow this industry all their lives; in most instances commencing as boys, growing up in it to manhood, and continuing at it as long as they are able to stand the fatigue and labor. A number of small open boats besides those attached to the vessels accompany the crafts. The owners of these give a share of the proceeds of the sponge they obtain to the owners of the vessels for towing them to the sponging grounds and allowing them ship room. The sponge they obtain is kept separate from the ship's cargo.

The method of obtaining the sponge from the sea bottom is by a staff and hook at the end, by which the sponge is torn from its place of attachment. (See illustration.) At greater depths than can be reached by the hook, the sponger will sometimes dive for them, but this is seldom resorted to. The water glass is an indispensable article in locating the sponge on the sea bottom. It is a wooden cone with a glass set in one end and open at the other. It is about eighteen inches long, and by placing the glass end just beneath the surface of the water and looking in the top, the operator has a clear view of the bottom of the sea, and with his staff in the hand not engaged in holding the water glass, he thrusts the staff down. When he sees and selects the sponge, he hooks it or tears it from its native bed.

The sponge, when taken from its resting place, has not the same appearance as when prepared for use. All its fine qualities are hidden. It is heavy, and contains a matrix of dark gelatinous matter with a dense external pellicle. This gelatinous substance is got rid of by maceration and washing, and the residuum is our well known companion of the bath. On placing any of these forms of sponge, before cleaning, in a tub of salt water, and with the aid of a lens observing the central portion of the body of the sponge, one will notice something like a fine woven cobweb projecting from the central part outward, from which refuse matter may be seen issuing. Looking more attentively, an immense number of very small pores will be seen, through which the food, infusoria and other organisms, is taken. The more powerful the lens, the more wonderful the internal structure is shown to be and the more surprising will the operations of nature in this particular case appear. With a powerful glass one can easily perceive the flagella or whips lashing the water, producing the inflowing and outflowing currents. Without the use of a magnifying power the sponge would appear as a dead, inert mass.

The propagation of sponges, the method by which they increase, is not only interesting, but is certainly very curious. At certain periods there will be formed projections from the surface, yellowish-looking buds, which grow until they detach themselves, when they are driven out by the outward flow caused by the flagella or whips lashing at the water. These yellowish-looking buds then appear as helpless atoms of jelly. But this is not the case. These tiny germs or atoms have a motion that we would not suspect. With a lens we see the whole of these minute objects covered with minute cilia, which vibrate and propel it through the water until, arriving at sufficient distance from the place of its birth, it settles down on the bottom, loses its cilia and grows—becomes a sponge.

After the taking of the sponge from its native bed they are all assorted and the different kinds and grades separated. They must be trimmed or clipped, as it is termed, baled, pressed, and incased in canvas to ship.

The sponging grounds of the Bahamas are well worth visiting. There is scarcely a more beautiful or interesting sight than a view in the clear limpid waters surrounding these sea-girt islands on a warm day. The marine flora, the various forms of coral scattered in rich profusion at the depth of a few fathoms, is something marvelous for its varied and extreme beauty, and is not surpassed in any part of the globe. In a tideway of medium flow it can be viewed to the best advantage. The graceful undulating sea fans, with a variety of sea anemones, with the colors of the rainbow, the branching coral, some fashioned, one would almost believe, with human skill and artistic taste, with the most beautiful colored fish sporting in these fairy grottoes, the water being so transparent that the bottom can be distinctly seen at a depth of over twenty fathoms, all combine to make a vision which for beauty, novelty, and variety is very fascinating, and once seen will not easily be forgotten.

TAKING SPONGES FROM THE BOTTOM WITH A POLE HOOK.

For information in reference to the growth, propagation, and habits of the sponge, also for statistics, etc., in this connection, I am under many obligations to the Hon. Judge Camplejohn, of Nassau, N. P., who has made a study of this subject for years. The local price of sponge ranges from 25 cents to $1.20 a pound, the fine wool sponge being the most expensive, while the yellow and glove sponges are the cheapest.

Heat from the Moon.

Mr. Frank H. Very's essay on the distribution of the moon's heat and its variation with the phase, which gained the prize of the Utrecht Society of Arts and Sciences in 1890, has recently been published. *Nature* says a bolometer in connection with a very sensitive galvanometer was used in the research, and the plan has been to project an image of the moon about 3 centimeters in diameter by a concave mirror, and to measure, not the heat from the whole of this, but only that in a limited part of it, from 1-25 to 1-30 of the area of the disk, the observations being repeated at different points and at different phases. Measures made six hours after full moon show that the east limb was hotter than the west limb in the proportion of 92·2 to 88·9. In one observation made a day after full moon, the excess of heat at the east limb was much larger. There is a regular decrement of heat in passing from higher to lower latitudes, and observations on this point appear to indicate that heat is accumulated after many days of continuous sunshine. The heat in the circumferential zone of the full moon differs from that of the center by about 20 per cent. In this respect, therefore, the thermal image is like the visual one. There seems to be some evidence that bright regions radiate a little more than dark during the middle of the lunar day, but this is not quite proved, and with a low altitude of the sun the effect is reversed. A comparison of the curve drawn by Zollner for the moon's light with that deduced from Mr. Very's observations brings out the point that visible rays form a much larger proportion of the total radiation at the full than at the partial phases, the maximum for light being much more pronounced than that for the heat. The diminution of the heat from the full to the third quarter is shown to be slower than its increase from the first quarter to the full. This result agrees with that obtained at Lord Rosse's observatory, and is direct evidence of the storage of heat by lunar rocks.

Compressed Air Power Transmission.

The town of Lucerne, Switzerland, after having had four years' experience of alternating current distribution of light by Ganz & Company, is about to supplement this by a distribution of power from the same water power; but this will be carried out, according to arrangements made with Messrs. Riedinger, of Augsburg, by means of compressed air. The town of Offenbach has also completed an installation of compressed air distribution, which seems to be causing great interest among German engineers. The total length of pipes laid amounted to 7760 yards, of which 1702 yards consisted of pipe 1 ft. in diameter, 1710 yards 8 in. in diameter, and 4347 yards 4 in. in diameter. The pipes were laid about 1½ ft. below the footpath. The connections of the pipes were made by means of India rubber, as in the similar installation in Paris. Valves are provided for shutting off the air from separate lengths of pipe. A trial of the system was made by the engineering authorities of the town and by the Boiler Inspection Association, which showed that there was a loss of 0·11 of an atmosphere in 7½ hours—that is, 0·39 of a cubic meter per hour kilometer. This loss amounts to 13 per cent on the daily output, the power transmitted being, on an average, 500 horse power.

Germs of Malaria.

The Washington *Star* thinks some day a method of inoculation for the prevention of malaria may be devised. Science has got hold of the germ recently, and identified it beyond question. It is not a bacillus or any kind of bacterium, as has been imagined, but an animal parasite. The name given to it is plasmodium malariæ. It belongs to the lowest grade of animal life, being a "protozoon."

This little parasite, which is of microscopic dimensions, appears to make its home ordinarily in the soil. It is plentiful in swamps, but wherever virgin ground is turned up for the first time, the plasmodium is apt to be very numerously present. It has been noticed in towns that when much digging and turning over of earth has been going on, malaria exhibits a tendency to prevail. There has been a good deal of digging in Washington lately.

Entering the human body through the lungs, the plasmodium seeks a roosting place in one of the red corpuscles of the blood. These corpuscles are in shape flat round disks, bearing a curious resemblance under the microscope to pieces of money. How essential their well-being is to health, everybody knows. The parasite having taken up its residence in one of the corpuscles, proceeds to multiply, forming a little colony. The colony feeds upon the material of the corpuscle, which thus becomes disorganized and is finally destroyed, so that the hostile germs are set afloat in the blood. At the beginning they were merely bits of protoplasmic jelly, without any particular shape, but now they become free swimmers and have developed long hair-like oars to paddle about with. Each one has three such oars radiating from its body. Thus they make their way through the veins and arteries, following the tide of the circulation.

Of course, it is not possible that this sort of thing should go on to any considerable extent without seriously affecting the health of the individual. The latter is attacked by chills, alternating with fever. Quinine and other remedies destructive to the parasites relieve these symptoms. However, if the patient continues to be exposed to the absorption of the germs in a malarious region, medicines will cease to have effect. The blood, invaded by hordes of plasmodia, becomes filled with disorganized red corpuscles, and nature gives up the fight, death ensuing.

Now that medical science knows precisely what it has to contend against in the treatment of this hitherto mysterious disease, it may be able to find more effective remedies. Already the discovery has enabled physicians to correctly diagnose many malarial cases which have a way of counterfeiting typhoid fever and other troubles. In such instances the presence of the plasmodia in the blood, readily ascertained by the microscope, settles the question. Besides, if one must suffer, it is a great comfort to know what is gobbling one up.

Another Rain Producer.

In the SCIENTIFIC AMERICAN for September 5, 1891, we published an extract from a U. S. patent granted for producing rain by explosive balloons. It now appears that a patent was granted in Austria on January 13, 1874, for what is termed an "apparatus for discharging electricity from hail clouds." After describing the theory of the formation of hail, the patentee says that if a balloon armed with metal points or covered with metal is sent up into a lower hail cloud charged with electricity, the latter passes to earth by the copper wire which holds the balloon captive, and the moisture in the cloud does not congeal but drops to earth in the form of rain. The drawing annexed to the patent shows a balloon with metallic points and a windlass on which is coiled the wire or cable for forming the ground connection and raising and lowering the balloon.

SLIPS for the broadside docking of vessels have been built at three of the principal ports of France. By this means vessels are to be hauled out of the water without straining, and the cost is less than by the ordinary means of placing in a dry dock.