SILVER VEINS.

Gigantic Excavations in the Great Ore Bodies.

FIGHTING SUBTERRANEAN FLOODS

The Working Miners and Their Organization.

A RULE OF SILENCE.

Temperatures in the Depths and Mode of Regulating Them.

AVERAGE DAILY WAGES.

VIRGINIA CITY, Nev., Dec. 30, 1878.

The greatest drawback to deep mining is the incessant trouble from water. It is this element more than anything else that eats up the assessments of the older mines. It has hitherto been very costly, but its reign of terror over superintendents is hastening to a close. There is a diversity of opinion about where it comes from. The seapage, with the surface of the mountain for a beginning, accounts for some of it, but there are incidents in mining experience that cannot be covered by that; and as a large mine has recently been afflicted by it and has a peculiar and special experience I select that mine for the water question.

In February of 1876, while the miners were prospecting north from their incline on the 2,200 foot level, they tapped a body of water that burst in upon them with such a rush that the miners in the lower levels had to fly, leaving behind them their tools, clothing and everything they had with them, and run up the incline to save their lives. The pump at that time was but an 8-inch plunger, and although bailing tanks of 1,500 gallons capacity were put on and run as rapidly as possible, both together could not keep the water in check. It gradually gained upon them until it rose to fifty-five feet below the 1,700 foot level, where it seemed to find its own level, and, very singularly, when it got to that point it ebbed and flowed like the sea, rising and falling ten feet every twenty-four hours.

Believing in the eventual richness of the mine the management resolved to fight the intruder, and in July of the same year a 14-inch plunger was put in, running to the bottom of the vertical shaft, a depth of 1,300 feet, and a 13-inch plunger down the incline, following the water and adding other lifts as the water receded. The expense was enormous—the pumping engine alone costing over $275,000, and the immense rods constructed from timber 14x14 and 60 feet long, joined together with iron slabs 5 inches wide, 1 inch thick and 25 feet long. The whole together was nearly half a mile in length and cost about as much as the pump. The various machinery necessary to complete the pumping apparatus—compressor for compressing air in order to work the donkey pumps, &c—cost fully as much.

The new pump has been running since August, 1876, and has made 9,200 strokes every twenty-four hours, throwing fifty-three and a half gallons of water per stroke, or 492,200 gallons a day. Several times the water has been reduced to within seventy-five feet of its source—the 2,200 foot level—but owing to the intense heat (157 degrees), and the difficulty of keeping in thorough repair such a long system of pumps it has again forced its way upward, and now stands above the 2,100 foot level. The expense of pumping this water is fully $30,000 per month.

THE COMBINATION SHAFT.

The adjoining mines, being also troubled with the water, have joined with the one described and have nearly completed a "combination shaft," the pumping machinery of which is expected to pump out the whole of the water from the three mines and keep them "as dry as bone." Following the new idea of sinking shafts far to the eastward of present workings, this combination shaft is being sunk 2,327 feet east of the Chollar-Potosi present shaft and nearly in the centre of the properties of the three mining companies. It is a magnificent piece of work and exhibits unmistakably that the owners believe in the long continuance of deep mining on the Comstock. The location of the shaft so far east will require the sinking of 3,000 feet before it strikes the west wall or west casing of the Comstock lode, and in its course downward it will enable the miners to prospect directly from the shaft at all desirable depths, which is a great advantage over the incline working which had to be adopted from the old shafts.

ITS CONSTRUCTION—STRIKES THE SUTRO TUNNEL.

This new shaft has four compartments. Three are 5x6 feet in the clear, and the fourth, which is used for the pumps, is 6x7 feet. It is timbered with red spruce 14x14, which is unexcelled for durability, and is planked outside with the same material 3 inches thick. "Sets of timbers" are 4½ feet from centres, and when complete and in place consume about 4,000 feet of lumber. The excavation for the shaft is about 10 feet in width and about 30 feet in length.

At the depth of 1,593 feet a drift runs north 366 feet and intersects the Sutro Tunnel. At the depth of 1,703 feet a drift runs west connecting with the neighboring incline, giving ample ventilation, the fresh air passing down to the bottom of the shaft, then up and through the drift, the incline and the shaft. The air blows a gale through this drift. The shaft has been sunk 2,265 feet, and there work was suspended in order to occupy the entire force in putting in the pumps, rods, &c., for raising the water.

THE PUMPING ENGINE

is a compound vertical beam engine with two cylinders, the large one 65 inches in diameter, the smaller one 32 inches and about 10 feet stroke. These cylinders stand over the beam and are connected to one end; with the other is connected the pump rods, of Oregon pine, 15 inches square and in lengths of 100 feet each. They are strapped together with iron plates on the four sides, 1 inch thick, 10 inches wide and 34 feet long.

There are a double line of pumps, 15 inches in diameter, which will throw at each stroke 147 gallons of water, and will raise more water than any three of the largest pumps now working on the Comstock. The pump rods and pumps are handled by a large steam winch, capable of raising a weight of sixty tons. The sinking to the present depth has been done with a single engine, 20 inches in diameter, 36 inches stroke, running two reels, so arranged that one raises the rope while the other lowers it, or "one up, the other down."

THE "SKEET."

The rock extracted in sinking the shaft and the water encountered up to this time is raised in a "skeet," which is automatic in its action, and was first introduced at this shaft. The "skeet" consists of a rectangular iron box, set in a frame or sash of iron, and of capacity for about four and a half tons of rock. On the arrival of the "skeet" at the surface the box is turned over and the contents discharged into a "dump" or "bin" at the side of the shaft, from which the water runs away, and the rock is taken by the "carman" and dumped into the "waste pile." On lowering the "skeet" the box instantly resumes its upright position, two latches drop into place and hold it in position, and it slides down the shaft ready for another load. The cost of the shaft, machinery, building, &c., has been about $1,060,000. Work was begun January 9, 1875; grading for site for the shaft and buildings began on the 1st of January. In 1875 477 feet were sunk; in 1876, 588 feet; in 1877, 755 feet, and in 1878, 445 feet. The work was suspended for the purpose of putting in the pumps on the 25th of June. The bottom of the shaft is now 667 feet below the Sutro Tunnel.

THE MINERS WHO DO THE WORK.

There are seasons of dulness in mining as in everything else, arising sometimes from the inability of some companies to procure all the money necessary to prospect or do "dead work." Others, again, may want to straighten up their shafts or make other changes, and at such times the miner may have "a spell" of idleness. Here, on the Comstock, or within seven or eight miles, they may number from three thousand to five thousand. Three-fifths are Irish, one-fifth English, Welsh and Scotch, and the other fifth Canadians, French and Americans. This estimate I have from a prominent member of the Miners' Union. They are not to be classed with laborers; the miner is a skilled mechanic, generally intelligent, orderly and sober. Most of the superintendents are men who have worked underground with pick, shovel and drill. The biggest millionnaire on the Pacific slope was a miner, and is prouder of that fact than of his millions. He is an incessant worker, looks to every detail of his mines on the surface; is about from five A. M. to five P. M., and goes into the mines every day and sometimes through the night. He is a perfect Hercules, with a brain brimful of facts and common sense. My task is not to philosophize about "good luck." I know nothing but the providence of facts.

Working of a mine requires brains everywhere, and from the owner of the mine, down through the superintendents, foremen, shift bosses to "the pick boy," clear heads are as indispensable as strong and brawny arms. The French officer, to whom I referred in my first letter, who was astonished at finding a well read clerk behind a desk in a small country hotel in California, would be surprised with some acquaintances he might make in the mines on the Comstock. They are eight-hour men, and by a very just arrangement their "shifts" are changed every two weeks. The division of the day is from seven A. M. to three P. M., from three P. M. to eleven P. M., from eleven P. M. to seven A. M.; so all of them have their share of daylight every month, in which they have the opportunity for intellectual improvement and also the day leisure for attending to their own personal business. Many of them have dealt in stocks and got rich, and as many or more perhaps could tell of their utter ruin by a contrary experience. Many influential citizens of California and Nevada have their sons in the mines learning to be miners. It is the most promising profession in the country.

DIVISION OF MINING LABOR.

As a classification of this industrial labor the following statement of the average number of men employed in all capacities is interesting:—2 foremen, 4 assistant foremen, 12 shift bosses, 2 timekeepers, 2 ore shippers, 2 samplers, 14 assayers, 12 engineers, 6 brakemen, 6 firemen, 8 watchmen, 10 blacksmiths, 8 machinists, 5 riggers, 15 shaftmen, 75 bulkheaders, 10 surface timbermen, 18 carpenters, 12 carmen, 1,090 miners. Total, 1,313 men, and 740 men employed at the wood ranch of the Pacific Wood, Lumber and Flume Company. This is the force of one group of mines.

SILENCE IN THE MINE.

While mines are still yielding ore the management very properly keep all valuable information to themselves. Were it otherwise the streets would be filled with wild rumors, good and bad, every hour of the day. There is visibly a sense of obligation to keep silence about every person associated in any way with a mine. Every one realizes that "knowledge is power," and that this particular knowledge rightfully belongs to the officers of the company and not to the employés or the public. Before reflecting over this situation I was struck with the silence of the miners underground. The sharp ring of the miner's pick could be heard at "the breast," the hum and buzz of the cooling blowers, the oscillating and action of the patent drills, the sizzing of the escaping steam and the rumbling of the winze machinery, but not a human voice away from that of our own small party, as inquiry might be made or information volunteered. Through the long drifts the candles burned freely, illuminating the darkness and making every object visible enough; revealing the miners at work, resting or passing from place to place. Groups coming on to work; others standing in line to take their turn in getting on to "the cage" to mount to the surface. No one spoke to his neighbor. The superintendent had something to say to the foreman and the latter had some inquiry to make of "the shift boss," but all the others might have been deaf and dumb. In passing along from place to place I dropped a word here and there in the way of "Good morning, gentlemen!" but no tongue answered and no eye sent back a responsive glance. At first I thought the miners might be of foreign nationality and not understand my language, but the second thought brought forward the fact—it was system, the science of military service, sensibly applied in a civil industry. Where large bodies of men are working together silence is wholesome and profitable, but engaged in an industry where the work of an hour in a rich body of ore or striking a "hump" of worthless porphyry might change the values of stock to the tune of millions, it becomes imperative that miners "have eyes and see not, ears and hear not," and tongues that never even whisper.

THE TRICKS OF THE TRADE.

Where great gains are often effected by a little early information on the condition of the mine it is to be expected that every means will be resorted to in order to obtain it. There are men here who live by gaining this information and immediately forwarding it telegraphically, in cipher, to brokers in San Francisco. Such professionals are called "pointers," as they furnish the "points" which determine the purchase or the sale of stocks. The "pointer," of course, is unknown, and to be successful he should be the last gentleman to be suspected of any *liaison* with the miners. A good story, and true, I believe, is told of a young man who was working in one of the bonanza mines at a time when "a horse" was struck. Two hours before his "shift" would have performed its task he swooned and fell among the rock. The imitation was excellent, and his sympathizing comrades treated him with the utmost care, dashing upon him ice water and carrying him to the coolest place on the level, where he could be supplied with fresh air from the blowers. He, however, persisted in not recovering and was taken to the surface, for which he had so artistically played. Immediately that he was free of the attentions of those who had so well cared for him he rushed for the ear of the "pointer," gave him the "bear" information, the "cipher" went over the wire, stocks were hurriedly "shorted," the market was bewildered, the news got out, stocks broke in wild confusion, the "pointer" and his friends made a large amount of money and the swooning miner was handsomely rewarded. This sharp business was so quickly done and so well executed that the first intimation had by the superintendent of the mine of the presence of the "porphyry" or "horse" in the body of the rich ore was by telegram from San Francisco. That superintendent is proverbially the most vigilant man on the Comstock, but the little swoon gave two hours the start of the "boss'" report at the end of "the shift."

It is commonly believed that there are men working in the mines for the usual pay, covering up the more remunerative reward they receive for supplying brokers in San Francisco with valuable information. Honorable miners not only dislike this duplicity and declaim against it, but they feel it a serious annoyance, as the leaking out of such information is as apt to throw suspicion on the innocent as on the guilty, and where the guilty one is not discovered a whole shift of men have been discharged and never re-engaged.

It is to such sources of information—oftentimes premature, frequently wrong and only seldom right—that the stock market owes its violent fluctuations and its panics, that demoralize everybody and ruin thousands of persons who know nothing of the whys and wherefores for the changes.

THE MINERS' UNION.

Like every other organization for the regulation of the prices of labor it has its advocates and its opponents. It chose a patriotic day for its birth, and so formally organized July 4, 1867, with a president, vice president, secretary, treasurer and other officers, who are semi-annually elected by ballot. No person is admitted to membership without some one vouching that he is sober, honest and of good moral character. The initiation fee is $5, with a monthly fee of fifty cents and any other assessment as may be agreed upon at the regular monthly meeting by a vote of two-thirds of all its members.

The object of the union is to preserve and keep up the highest wages—which at the present time are $4 a day—and to extend the "benefits" of $8 a week, besides other attentions from the "Visiting Committee," to any member who by sickness arising from natural causes may be incapable of following his daily labor. In August of last year the superintendent of the mines came to an understanding with the union that none but its members should be employed in the mines; that eight hours should be a "shift," except where the temperature was over 100 degrees, and that then six hours should be the time of labor, and the pay in either case should be $4 a shift.

The Miners' Union has a very good suit of rooms and a large reading room on B street, with a library that bespeaks more intellect than frivolous romance. The daily papers and the illustrated of New York are all there, magazines and periodical literature and the weekly papers of the principal cities of the Union. English papers are also to be found on the table. Side rooms are furnished with cards, the chessboard, "checquers" and, in Gold Hill and Silver City, a billiard table.

To all intents the union is in the height of its power, and in all probability will remain dictator while the mines are prosperous or in expectancy of success. There is too much at stake for the management of a mine ever to think of measuring strength with "a strike." The unceasing flow of water must be every moment fought, and to "shut down" a mine is to announce disaster. There is such a thing as resurrection, but it is a frightful expenditure of money to reopen a mine and place it where it was when work was stopped. The Miners' Union doubtless realizes all this, and is, for ought I know, delicate and considerate in the use of its power. With a continuance of prosperity the agreed number of working hours and rate of wages will exist, but without this prosperity a day will come when the miners will have to decide on permitting a lower priced labor to exist or for mine owners to leave the country. I hear no one begrudging the present prices paid to the miners for their labor underground, especially as in hot places it is very trying, but a very large amount of low grade ore is accumulating, which cannot be worked at the present rates, and before the abandonment of the Comstock takes place, in some other generation, the experiment of working these ores will be tried.

THE HEAT IN THE MINES.

In some parts of the mines the heat is excessive and physically overpowering—where the proper ventilation has not been obtained, and that is at times beyond the will of genius or the power of wealth. The constant aim of a superintendent is to open connection from his mines to another, where mutual benefits are experienced in a current from some shaft or other connecting with the surface. At the present time there is but one hindrance somewhere about the centre of the Comstock, to a continuous underground route from Utah in the North to Overman in the South. It is hoped that the Sutro Tunnel may do some good and the new deep shafts improve ventilation; in the meantime the air from the surface is sent down to the lower levels, by great blowers through very large tubes, diffusing its refreshing influence to grateful natures, and in time ventilation will be perfect.

By most people it has been thought that the actual depth of a mine had everything to do with its temperature, but experience here and elsewhere has destroyed that notion. The deep mines are generally warm, but in the same district a mine now and again is found where heavy clothing is necessary to the visitor going underground, and also in the warm mines the temperature of upper levels has been found higher than in other levels some hundreds of feet lower.

No less than ten thousand tons of ice are annually consumed in the lower levels. Blocks of ice are placed along the drifts and everywhere near the men are large casks filled with ice for their use. Notwithstanding all the appliances brought to their aid there are places where work must be done in order to "open up" the mine, where the miners are able to work but two or three minutes at a time. The miners so engaged work not more than three or four hours a day. One half are "cooling off" while the other half are at work. This respite is called "a pass," and the time allowed for each "pass" is regulated by the miners themselves, according to the degree of the temperature and the condition of exhaustion.

THE COST OF LABOR IN ONE MINE.

A dividend paying mine made a detailed statement of wages paid last year in extracting 217,432 tons of ore and reducing of that amount 213,683 150-2,000, in the following figures:—

306 days' labor at	$250 00 per month...	$2,500 00
255 days' labor at	200 00 per month...	1,600 00
19 days' labor at	7 00 per day.....	133 00
1,195½ days' labor at	6 00 per day.....	7,173 00
32 days' labor at	5 50 per day.....	176 00
7,233½ days' labor at	5 00 per day.....	36,167 50
940 days' labor at	4 50 per day.....	4,230 00
178,134 days' labor at	4 00 per day.....	712,536 00
3,359 days' labor at	3 50 per day.....	11,756 50
30 days' labor at	3 00 per day.....	90 00
Total		$776,362 00
Average daily wages		$4 05½.
Total cost per ton		$19 08 8-10
Hoisting ore and waste	$0 85 7-10	
Reducing	10 38 9-10	
Labor	3 57 5-10	
Supplies, bullion taxes and general expense	4 26 7-10	
		$19 08 8-10

The other expenses in turning this bullion into gold and placing it in the vaults of the Nevada Bank in San Francisco, where the stockholders draw their dividends, are given here:—

Discount on bullion	$1,039,947 18
Refining	207,355 38
Bullion freight	70,315 26
Interest and exchange	78,811 94
Taxes	991 85
San Francisco office expenses, including stationery, salaries, etc	16,323 98
Total	$1,413,745 59
This amount divided by the number of tons worked (213,683), gives a cost of	$6 61 6-10
Cost per ton in Virginia	19 08 8-10
Total cost per ton	$25 70 4-10

While the average of daily wages in one mine is placed at $4 05½, that of another is $4 33 6-100. There are, no doubt, variations in the cost of labor in other mines, but those interested in mining companies in the West will find valuable and reliable information in the foregoing tables for their future guidance. Those who know of mining twenty years ago cannot fail to be surprised by the great progress and wonderful proportions of this mining industry.

NORTH CAROLINA'S DEBT.

Governor Vance, of North Carolina, in his recent message to the General Assembly of that State, speaks of the debt of the State as follows:—

The public debt, it will be seen by the Treasurer's report, amounts to $16,960,045 principal and $10,160,182 25 interest. This is known as the recognized debt, as contradistinguished from the special tax bonds. What shall be done with it is a question that deserves your best consideration. It is out of the question for us to attempt to pay it at its face value. Indeed, I do not conceive that there is any moral obligation on us to do so, nor do our creditors expect it of us. Quite one-half of our property upon which our bonds were based was wantonly destroyed by consent of a large majority of those who held them, and no court of conscience upon the earth would permit a creditor to destroy one-half of his security and claim full payment out of the remainder. But we can and should pay something. The resolution of last session constituting the Governor, Treasurer and Attorney General a committee to confer with our creditors gave no power to make or accept any proposition whatever, and so an invitation to visit New York to confer with the holders of our bonds was declined. Besides this, no attempt to open negotiations with us has been made. But I have grounds to believe that very reasonable terms indeed can be obtained if we evince a determination to settle the question and be done with it. I refer exclusively to what is known as the "recognized" debt. So far as the special tax bonds are concerned my opinion, as expressed to your predecessors, remains unchanged—that they are not binding either in law or good morals, unless it may be as to a very small fraction honestly appropriated to the State's use and accepted by her. For one I avow my readiness to co-operate with you to the full extent of my power in devising the method and bearing the burdens of an honorable adjustment of all our indebtedness, as something which, sooner or later, will have to be done alike for the sake of our good name and our future prosperity.

PROFESSOR VON HOLST'S LECTURE.

Professor Von Holst, of Freiburg, who has been sent to this country by the German Academy of Sciences to complete his great work on the United States, will lecture at Steinway Hall, next Wednesday evening, on "Calhoun." The Professor is regarded in Europe as the best authority on American constitutional history, and his lecture is likely to be heard with interest.

FATAL FALL DOWN STAIRS.

Between two and three o'clock yesterday morning Mr. Bernard Kelly, of No. 16 Morris avenue, Newark, got out of bed and started to go down stairs for some purpose not stated. He fell down the entire flight, struck heavily at the bottom, fractured his skull and died shortly afterward before a doctor could be summoned. His friends state that he was perfectly sober. He leaves a wife and five children.

SURF GUARDIANS.

The Life Saving Service on the Long Island Coast.

TOILERS OF THE SEA.

Visits to the Stations from Montauk Point to Coney Island—Defects of the Government System.

LIFE SAVING STATION 36,
ROCKAWAY BEACH, Jan. 11, 1879.

The Third district of the Life Saving Service includes the coasts of Rhode Island and Long Island, the most important stations, about thirty in number, being located between Montauk Point and Coney Island. Captain Hunting, of Bridgehampton, is the superintendent of the district. From the lighthouse at the eastern extremity of the island the beach is unbroken to Fire Island with the exception of a sorry little inlet through which the fishermen are vainly endeavoring to coax Shinnecock Bay to join the ocean. This inlet starts from a creek in the bay bearing the unromantic name of Porgie Hole. On the bold headland of Montauk is station No. 6, which has all the life saving appliances but has been for years without a crew and in charge of the keeper of the lighthouse, Jonathan Miller. Ditch Plain, No. 7; Hither Plain, No. 8, and Napeague, No. 9, divide the Point from Amagansett, where the schooner James A. Potter went ashore on December 21, the crew being gallantly rescued by Keeper Charles J. Mulford and his surfmen. Passing Georgica, No. 11, David Barnes, keeper, the first of the new stations is reached at Bridgehampton. The old houses east of this point are low and uncomfortable, and the sleeping accommodations of the crew the reverse of agreeable. The new house at Bridgehampton is very handsome, presenting the appearance of a cottage at a fashionable watering place. There is a space between the inner and the outer walls, however, through which the wind finds its way, and sings anything but a grateful lullaby around the ears of the shivering crew in their cots. The Parrott gun at this house will throw a line-carrying shot over four hundred and fifty yards. There are two boats, one of cedar and the other of the Francis metallic pattern. Both are well provided with oars of the best kind. In one respect the surfboats on this coast have the advantage over those of the district of New Jersey. With very few exceptions they are furnished with cork fenders and metallic air tanks, the latter being placed fore and aft along the sides.

IMPERFECT LAMPS.

The lamps for patrol purposes at this and all the other houses are entirely unfit for service. The glass does not fit tight and the light cannot stand even an ordinary breeze. A good patrol lantern is of as much importance as a good boat. On a wild night a sentinel of the surf is in extreme danger of losing his life should his light go out. There is not a fishing craft off shore that cannot boast of having superior lanterns to those furnished by the government to the life saving stations.

EITHER SIDE UP.

In a small boat house near the Bridgehampton station is a Rider life raft. The surfmen place very little reliance upon it and speak contemptuously of its life saving qualities. "They say that it will float in any sea; but the trouble is that we can never tell which side will be uppermost." Another advantage which the crews of this district have over their brethren in New Jersey is in being allowed to use powder in their mortar practice. Drill in this essential branch of the Life Saving Service without powder is as absurd as would be training at Creedmoor with empty guns. Yet the use of powder, except in actual service, is prohibited by the government regulations on the Jersey coast. Keeper Baldwin Cook and his crew won renown by their gallant but unavailing efforts on the occasion of the Circassian tragedy. Station No. 13, at Southampton (Keeper Burnett), is similar to its eastern neighbor, being a new house. The cedar boat and Francis' metallic boat are also of the same description as those at Bridgehampton. The station has been presented with a handsome library of eighty volumes by a New York gentleman. When the schooner Annie C. Cooke came ashore at this point two years ago the captain, his wife and daughter were brought from the vessel on a very primitive specimen of boatswain's chair. A greater degree of tidiness would add much to the interior appearance of this house. There are three boats—two metallic and one of cedar—at station No. 14, Shinnecock; keeper, A. H. Hand. The bull's-eye lanterns furnished by the government for patrol duty are even worse than the old lamps, and are very rarely used. This is another item in the long list of condemned materials with which the life saving stations are lumbered. A large tub has been sent to each of the houses, in which the whip of the breeches buoy is to be coiled. It is too small for that purpose by two-thirds, and is consequently consigned to the condemned list.

GOVERNMENT SURFBOATS.

Keeper Phillips, of station No. 15, Tyana, has a large cedar boat, which is so sharp in the bow that it is almost impossible to steer her in a heavy sea. Keeper Jessup, of station No. 16, Quogue, has a four-oared cedar boat of the Sag Harbor pattern, which is second only to the famous Squan boats for work in the surf. The crotch sent to all the houses for the breeches buoy consists of two planks of enormous weight, and the keepers have been obliged to split one of them, using the divided portions of the plank for actual service. The metallic boat at station No. 17, Keeper Franklin C. Jessup, can take ten persons ashore in a heavy sea in addition to the crew. The shot lines at this house were in excellent condition, and the keeper explained that the cause of the destruction of these lines in some houses was in putting them up in a damp condition after service. The new Coston lights are covered around the edges with thin paper instead of tinfoil, rendering them more liable to become wet and to fray the fuses. The crew of this house did efficient service during the last winter, when the Norwegian bark Frederik and the schooners Armstrong and Marcus Hunter stranded.

The bar runs close to the shore at station No. 18, John Culver, keeper, and a tailblock for the breeches buoy is needed. There is but one set of oars for the four-oared cedar boat. The western patrol of this house is two miles and a half in length. The surf during a gale and high tide cuts "sluices" through the western patrol of the next station, No. 19, Sidney Smith, keeper, and endangers the lives of the men who are obliged to ford them. They are frequently compelled to take refuge on a sandhill and to wait there shivering until the tide falls. The cedar surfboat is at least one-third too heavy for its purpose. A drag astern would be of great assistance in coming ashore in a heavy sea. The boat wagon at station No. 20, J. H. Bell, keeper, is very old and unnecessarily heavy. The axle is of wood, and at times the exertions of the crew are unable to move this cumbersome vehicle. There is an iron ring instead of a bull's eye for the sand anchor to set the cable through. The mortar does not fit the bed provided for it, although it was sent expressly from Washington. The boat wagon at station No. 21, Silas Rogers, keeper, is out of order and is liable to go to pieces when used. Some of the balls do not fit the mortar and are, therefore, more ornamental than useful. The oars are of different lengths and the boat very heavy.

GOING TO A WRECK.

Keeper Thurber, of station No. 21, Bellport, thinks that paint injures the oars, and prefers oiling them. At the time that the ship Spartan went ashore the crew took the mortar and its apparatus a mile and a half from the government house. They pressed an old horse belonging to a neighboring farmer into the service; but the attenuated animal soon gave out, and the crew were obliged to put their shoulders to the wheels of the handcart themselves. A horse whose only regimen is sage and scrub oak is not likely to attain strength. The western patrol of this post is extremely dangerous, a high tide cutting sluiceways through the sandhills. Captain Thurber has great confidence in the Merriman life suit furnished by the government and thinks that the objections raised against it arise from want of experience and practice. The crew took care of thirty-two persons from the Spartan last March and the tiny cooking stove proved entirely inadequate for the demands made upon it. The store room in all these houses is up stairs, over the boat room. It is no easy task to carry heavy barrels through a narrow hatchway, and, should one of them leak, the life saving apparatus must be materially injured. In a gale from the south, veering to east or west, a very ugly cross sea is formed on this coast, and, in such a case, the government surfboats are practically useless. A four-oared cedar boat and a Francis metallic lifeboat, with a shaky wagon, form the principal portion of the life saving appliances at Lone Hill, No. 23, James Baker, keeper. The crew of the steamship Great Western, which was lost on this coast two years ago last March, were hospitably entertained at this house for three days. The government pays only forty cents a day for each person thus provided for, although it costs the crew a great deal more. Keeper Smith Rhodes, of station No. 24, Point of Woods, has very bad oars for his four-oared cedar boat, and the beeeches buoy has only one tailblock.

AT FIRE ISLAND.

Near the Fire Island lighthouse and signal office is station No. 25, Lucien Jeffrey, keeper. Here the first of the inlets is reached, on whose shoals many a vessel left her bones before the lighthouse was built. Even now, like moths around a candle, some craft insist upon running in too close and stranding on the shoals that surround the inlet. When the schooner Ida B. Silsbe went ashore on November 23, the crew pulled their boat through the breakers for an hour and a half dead to windward, and brought all off safely, although having no confidence in their craft. In a house close to the inlet is a Richardson lifeboat, similar to those at Atlantic City and Townsend's Inlet. With a crew of twelve or fourteen this boat would be very serviceable, as she is self-righting and self-bailing. But with her great weight and draught of water she is not the craft for the shoals on this coast. Once aground, she would be entirely helpless. On a rocky coast, like that of Maine, where her inventor is superintendent, the Richardson lifeboat is invaluable. Crossing the inlet, which was full of drifting ice, I came to station No. 26, Oak Island, Henry Oakley, keeper. The Parrott gun at this house can throw a line carrying shot 387 yards. The bar runs in close to the shore except at the inlet.

A DANGEROUS PATROL.

On the west end of Oak Island stands Station No. 27, Frank E. Wicks, keeper. Here is another dangerous patrol, full of sluiceways at high tide, through which the surf rushes, the depth often exceeding six feet. Quicksands abound at this point. More than one-quarter of a mile of the sand hills has been washed away within two years. In very cold weather the ice from the inlet is piled up along the beach, thereby increasing the perils of the surfmen on patrol. The gunwale and thwarts of the four-oared surf boat being too low, the keeper was obliged this winter to raise the gunwale nearly four inches. The schooner General Connor went ashore in a southwest gale at Jones' Beach last winter. The crew of this station, with the assistance of the men of the next house to the west, took off the captain, his wife, daughter and crew, all of whom had taken refuge in the fore rigging. It was a hard pull of three miles, and the women were almost exhausted when taken ashore. The life-saving crew cheerfully surrendered their sleeping apartment to them and sought scanty accommodations in the boat room. A new set of oars and a supply of bedding is needed at this house. Two inlets—Gilgo and Ketcham's—divide this station from No. 28, Jones' Beach, A. C. Wicks, keeper.

A LIFE-SAVING STATION ADRIFT.

This house had a variety of adventures last winter, and the courage and determination of its crew, under the most trying circumstances, were remarkable. Toward the end of November the surf reached the house and beat against it with such fury that the crew went to work and removed all the equipments in the surf boat to a place of safety. The next day the surf took the house out to sea, and afterward left it on another part of the beach. The crew secured it with difficulty and shovelled the sand away from it, each tide bringing the sand back again. The house was then placed on another part of the beach, fastened down, and all the life saving apparatus brought back. About this time the General Connor came ashore and the crew worked manfully, notwithstanding the adverse circumstances under which they were placed. New Year's Day brought the surf three feet deep around the house, and the crew were again obliged to leave. They built a rude shanty at some distance from the station as a refuge in case their winter home should be entirely swept away. The following entry in the log of February 23 will give an idea of the discomforts of these brave men:—

We are all sitting upstairs with oilskins on. One of the men put on a Merriman suit to go out after small boat, which was anchored near house. Put ladder out of window, the stairs being washed away. Midnight—House just moved off the blocking and shifted quite a good way. Not a very pleasant place to stay in. One o'clock—Think of leaving the house, for we consider it anything but safe.

Before this the house was carried off the second time, a new inlet having opened under it, and it drifted over half a mile back toward the bay. Although the house stood on posts nearly six feet in height the waves dashed up against the windows. At last the present site was selected, and after five months of peril and exposure the crew found themselves in what promised to be a permanent resting place. Patrol around this station at high water is out of the question.

STATION TWENTY-NINE.

East of Jones' Inlet is station No. 29, Keeper Ketchum. This keeper was in charge of the drifting station to the east until the refusal of the former crew of this house to go to the wreck of the General Connor necessitated their discharge. The house is about half a mile from the surf, and it seems an herculean task to drag a boat and wagon across the wet, yielding sand. Crossing Zach's Inlet, I visited the new station now being built on Short Beach. It is a model structure, containing all the qualities of a first class life-saving station. Upstairs there are rooms for the keeper, the crew, stores and signals, and over them sufficient space to stow away all the condemned material with which the government lumbers these houses. It is not unlikely, however, that after some severe storm it will be called upon to repeat the experience of its eastern neighbor.

On the western side of Jones' Inlet is station No. 31, Keeper Lozee. The surfboat here is a very poor concern, liable to upset at a moment's notice. Last November it capsized alongside the schooner Gazelle, a mile and a half from land. The crew of the station regard this craft with a feeling akin to terror, and declare that she will be the death of them at some time. No patrol is kept at this house, as the sandhill near it commands a view of the entire district. A lifeboat at this point would be more serviceable than at Fire Island, on account of the greater danger of vessels coming ashore on the treacherous shoals that stretch out to sea in all directions. Lucy's Inlet, a small, insignificant piece of water at low tide, runs close to station No. 33, Keeper Johnson.

ANOTHER MODEL BOAT.

The boat at this house has been classed as Squan built, but it has not the first quality of the famous Jersey craft. It is so crooked on the bottom that it spins round like a bowl, and all the surfmen on the Long Island coast could not keep it from broaching to in a cross sea. There is a Francis metallic boat here, but with the old wagon in which it must be drawn it would be too difficult a task to get it afloat. Keeper Abrams' boat at station No. 34, Hog Island, has no air tanks. The life-car hawser and tackle are here, but no life-car. An adequate supply of bedding from the government stores would be acceptable to the men. The oars are entirely unfit for service. At station No. 35, Keeper Reinhert, is the worst surf boat on the entire coast. She drowned one man some years ago while going to the wreck of the schooner Statesman, and is likely to be the cause of another tragedy should she be kept in service. At the west end of Rockaway Beach stands station No. 36, Keeper Carman. The cedar boat here is so hard to steer that the Francis metallic boat is preferred by the crew. The oars are like those at some of the other stations, poor and treacherous. Captain Carman also has the charge of two condemned mortars. The new house on Manhattan Beach, No. 37, is of the same model as that on Short Beach, to the eastward.

LONG ISLAND AND NEW JERSEY.

Although the government has taken a lively interest in the Life Saving Service, and has done much during the last two years to make it worthy of the noble object for which it was established, yet a great deal remains before all the conditions necessary for entire efficiency are fulfilled. The energy of the superintendent of the Long Island district has resulted in giving the surfmen a few advantages over those of New Jersey, some of which have been already noted. There is not a boat on the Jersey coast, save one, provided with a cork fender and airtight drums, and only one in the Long Island unfurnished with these useful appliances. All the houses of the Third district have porches and storm doors, which are wanting in New Jersey. If these porches were lengthened a few feet they could be utilized as storerooms for the crews.

HOW A RUBBER BELT MIGHT BE UTILIZED.

The cork fender is by no means sufficient to constitute a self-righting element. The boat which capsized from station 31 remained bottom uppermost until the crew righted her by hauling her up to the stranded schooner. The suction of the air within a capsized boat counterbalances the properties of the cork fender. A rubber belt filled with air placed around the boat would, it is said, undoubtedly prevent a boat from upsetting. The self-righting apparatus should be placed on the outside of the boat, as the air drums fore and aft and near the thwarts take up too much room and add a great deal of weight to the boat. The rubber belt would be of service also alongside a wreck, as it can bear more pressure than any unyielding material. The surfmen everywhere along the coast agreed with this opinion of the self-righting rubber belt around a boat.

There is no excuse whatever for the miserable lamps and poor oil with which the government has supplied the life saving stations. When some of the poor surfmen are lost, after their lights are extinguished and they vainly attempt to get back to shelter through some of the perilous sluiceways I have mentioned, something may be done. A little circumstance will show the character of some of the material with which these stations is provided. The clocks of the houses are cheap and unreliable and frequently get out of order. The surfmen, as a general rule, are not able to provide timepieces of their own and must rely entirely upon those provided by the government. The hours of patrol are regulated and the observance of them entered on the journal. For signal purposes the houses are provided with field glasses which are not so efficient as an ordinary opera glass. Possibly the government pays for the best in everything it contracts for regarding this service. If so, it has been most wofully dealt with.

THE BOARD OF EXAMINERS.

Every year a Board of Examiners makes the rounds of the district, presumably for the purpose of looking into the condition of the service and of bettering it if possible. This is a very useful and commendable committee, if its examination is carried out in the true spirit. But, as a general rule, the examiner is a lieutenant from Washington who, perhaps, knows nothing about the life saving service beyond what is printed in the book of rules and regulations, none of which are of much practical utility. The questions for examination refer principally to the international code of flag signals, and many a hardy surfman who is invaluable in the hour of need is discharged because he cannot promptly answer questions which he knows are not of the slightest use to the service. When the time comes to put up flags on the flagstaff to signal a vessel in distress the weather is generally too hazy to distinguish them at any considerable distance. The time would be more profitably spent in getting out the surfboat or the mortar apparatus. Besides, few of the masters of coasting vessels know anything about the international signal code. The surfmen make fun of the flags, and in some cases prepare for the examination in an ingenious manner. I saw the entire list of signals painted on the boat room door a one station, and, while the examining lieutenant sat with his back to the door, the surfmen answered readily each question, the answer being right before their eyes. The Board also summons the crew out for surfboat practice regardless of the condition of the sea. It would be well on such occasions if one of these lieutenants were to go in the boat with the crew. The book gives rules for going to seaward, approaching a wreck and coming ashore through the surf.

"Why," said an old surfman, "if reliance could be placed on that book any greenhorn could stand in the stern of a boat with the steering oar in one hand and the book in the other and do as well as the best of us. Do they pretend to reduce the surf to rule and measure and to guide a boat according to set regulations? When I take the steering oar in hand I cannot tell precisely what I'm going to do. It all depends on the sea, and a very treacherous customer she is. At times it is almost instinct that guides us through broken waters—the instinct that a lifelong experience in the surf brings with it."

It is the same thing in the use of the mortar apparatus. The surfmen know when, where and how to apply it, and take advantage of every favorable circumstance. At one station the Board of Examiners detained the crew for examination although a wreck was reported, and, when the crew of the adjoining house arrived, they were ordered to go to the assistance of the endangered mariners, while the men in whose district the wreck occurred were obliged to remain and answer foolish questions. A Board of Examiners consisting of the superintendent of the district and a few experienced surfm