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THE ANGEL GUARD.

BY REV. PHEBE A. HANAFORD.

I tread the city's crowded streets,
The mountain paths I tread,
I pace the lonely beach at night,
When star-eyes watch o'erhead;
But wheresoe'er my footsteps go,
The angel guard attends, I know.

I have not seen the face of love
That bends above my way,
But is it not that mother's face
Who taught me how to pray,
Who guided once my infant feet,
Along the far off village street.

And whose sweet eyes are bent on me
But hers, which looked in mine,
The love which death can never dim,
The trust that is divine?
My dear ones in the church below
Are of that angel guard, I know.

Aye! those are there who loved me well,
While earthly paths they trod,
Who can not quite forget me now,
Though they are safe with God.
I, too, am safe—they round me stand—
All in the hollow of His hand.

Unharmed I tread the desert way,
What can my heart appal?
Nor dread the ocean's dangers now,
What sorrow can befall?
For death is life, and grief is joy,
With angel helpers ever nigh.
—Woman's Journal.

A Cheerful Religion.

The Rev. William R. Alger, of Boston, Massachusetts, has been called to the pastorate of the Church of the Messiah, at Park avenue and Thirty-fourth street in this city, and it was announced privately yesterday by the trustees that he had accepted the call and would soon be installed as pastor. The vacancy was caused by the resignation of the Rev. Henry Powers, and it was supposed at one time that the Rev. Robert Collyer, of Chicago, would succeed him, but Mr. Collyer declined, and the trustees called the Rev. Mr. Alger. This church was formerly under the pastoral charge of the Rev. George H. Hepworth, and earlier still of the Rev. Dr. Osgood. Dr. Osgood went over to the Protestant Episcopal Church, and the Rev. Mr. Hepworth became the pastor of the Church of the Disciples (Independent), after a formal announcement of his change of belief as to the divinity of Christ. The Rev. William R. Alger, the new pastor, is a scholar of established reputation. He is a native of Massachusetts, about fifty-one years of age, and is the author of several religious works, of which the "History of the Doctrine of a Future Life as it has Prevailed in all Nations and Ages" is an often quoted authority. He preached yesterday morning in the church over which he will soon be installed pastor, announcing his subject to be "A Cheerful Religion," based on this text: "Rejoice in the Lord always; and again I say, rejoice." Philippians iv., 4.

What forms, he asked, the basis of a cheerful religion? The principle that the welfare of man is the will of God. And is not this a sound principle? Who can look abroad with a wholesome mind over the great plan of the world and not see that the Creator clearly designs that His creatures shall be happy, and by swelling higher the tide of universal joy cause Him to be more abundantly glorified. It is only our own antagonism with one another that prevents this. God has endowed us with wonderful faculties. He has filled our habitation with goodly treasures. He has surrounded us with the seraphic hosts of beauty, blazing rank above rank, to his very throne. Then He has said to us: "My love toward you is shown in the immense provision made for the supply of your wants. Go forth now, roam over my works, learn their secrets, enjoy the pleasure they yield. Keep my laws, love one another, and be happy." To do this faithfully would be the practice of a genuine, unadulterated religion. And could anything be more cheerful? Why should the votary of a munificent faith wear a lugubrious countenance and go sighing and mourning to his grave? Solomon expressed his belief that the happiness of man is the will of God, in the striking proverb: "A merry heart doeth good like a medicine." The aphorism is true in a threefold sense. In the first place cheerfulness is an excellent prophylactic or recipe for warding off invading ills, as well as a precious stimulant under impending exhaustion. It is notorious that in the hospitals of a defeated army a far greater proportion of the wounded die than in the hospitals of the victors. Bright hopes are a fine tonic; gloomy fears act as a poison; therefore, happiness is the will of God, the helpful and inspiring law of things.

Secondly, a happy man is stronger and more capable than an unhappy one. He is fuller of vital energy, more accessible to the motives which are the soul of ambition and the spur of industry. He can consequently do more work and do it better than a disheartened and wretched man can. When we are happy, full of heart and life, then we strike out new plans of usefulness and honor, then we work with persevering vigor. But when we are sorrowful and distrustful, saddened by the aching of unsatisfied wants, then the world loses its value and life parts with its charms. The motives which before excited us become powerless and are sunk into indifference.

Thirdly, in the normal condition of things, enjoyment is favorable to virtue, while wretchedness is a panderer to vice. The true tendency of happiness is to render man genial, benevolent and grateful. An unhappy person is apt to become cross, misanthropic, tyrannical. The natural thirst of his desires being ungratified, he is discordant and uneasy. Many a man, soured by disappointment of his ambition, seeks a miserable comfort in malignantly deprecating those who have succeeded in theirs. Personal joy and contentment would transform this self-gnawing animosity into a peaceful and good will. A merry heart doeth good like a medicine; therefore, human happiness, not gloom and pain, is the design of the Creator, and the true religion. To love your Maker and your neighbor, do your recognized duties to the best of your ability, and with a bounding heart enjoy the world, without dread of a satanic power in nature, an inherited doom in history, or a yawning perdition in the future, this is a cheerful religion; and it is consistent with unperverted Christianity—namely, conformity to the Word of God and a perfect love which casts out fear. There is a raw religion of barbaric superstition, which is a sensational assimilation of the dark and portentous phenomena of nature. The savage tribes who hold this are slaves of terror, torturing themselves in the rites of their worship. There is also the arbitrary religion of morbid dogma, which is a metaphysical assimilation of the dark and portentous facts of life. The civilized nations who hold this are victims of anxiety, imagining themselves to be under a doom which they strive by various artificial means to avert.

Finally, there is the healthy religion of faith and love, which is a rational assimilation to the order and benignity of the universe. The enlightened and emancipated individuals who hold this, trusting in the infinite perfection of God, try to learn His will as expressed in the constitution of His works, and to do it; and then enjoying every good he has placed in their power, leave results in His hands without misgiving. The spirit of the first form of religion is natural alarm; of the second, artificial anxiety; of the third, grateful content. The first is the wild religion of ignorance; the second, the technical religion of disease; the third, the veracious religion of health. The first is an instinctive growth of superstitious imaginations, the next an elaborate product of morbid intellects, but the last is the normal correspondence in human experience of the Divine plan enacted in nature and providence—a true, cheerful religion. As a spring gurgles up from the heart of the earth, clear and fresh, scattering refreshment and producing verdure in summer, rearing its crystal structures and hanging its gems in winter, so in the centre of our being God has placed an immortal soul, the play of whose affection may gladden itself and all around with the choicest delights, and the activity of whose intelligence, winning conquest after conquest, may furnish pleasures without end. Our Maker unquestionably designed the conscious action of the faculties within us to be a fountain of unfailing joy. The eye never wearies of gazing on visions of beauty; the ear never cloys of listening to strains of melody; the heart is never surfeited in experiencing emotions of love; the mind never palls in searching out truth and contemplating mystery. But faculties deprived of their proper nourishment and activity, dissatisfied and out of tune, driving their possessors to pernicious gratifications, of course are productive of misery. Human nature can not be expected to yield happiness if it does not act in conformity to the intention of its Author, in harmony with the laws of the universe; still, through all, it is obvious that the grand design of God is the happy fulfillment of its office by every faculty, and that every instance of misery implies some violation of this design. Half of our life consists in receiving and returning the action of the natural objects around us. Leading from different parts of the globe into the bosom of Ancient Rome were five great highways or natural arteries through which the known world sent its wealth, its luxury, its art, to adorn and aggrandize the proud mistress of the earth, enthroned on her seven hills. So running from the outward creation into the human soul are the five channels of the senses, along whose mysterious ways, taste, smell, touch, sight and sound, form, weight and number, pour the riches of nature in endless streams, to teach and please the royal child of God crowned over all. How inexpressible the difference between being a man and being a weed or a stone! What an inexpressible a thing it is that the mind can think, perceive, create and aspire, that we live and move, experience and fear, love and trust, and can rise into fellowship with infinitude! What does it mean? If it does not mean that there is a blessed Spirit or Father who built the universe and who wishes us to be happy, and intends that in some form we shall be so forever, then it means nothing; then, indeed, a religion of gloom and terror would be the true one. But it does mean this, and the mighty arrangements made for human enjoyment show that faith, exultation, abounding joy, not foreboding and wretchedness, are what the Creator means for us. But since free moral agency is a part of the plan, the extent of the communication carried on between the individual and the race, and between the soul and the universe, the degree of harmonized activity in the spiritual faculties, the number and the intensity of the joys to be experienced therefrom, are left largely to each man to decide for himself. They depend on culture in conformity to law; they depend on his health, strength, knowledge, virture and industry. Who can declare how much happiness Newton derived from his discovery and contemplation of the true order of the solar system? Who would attempt to describe the pleasure music gave to the ethereal spirit of Mozart, to the melancholy and wizard mind of Chopin, or to the lofty and lonely soul of Beethoven? Who will undertake to tell the raptures with which Claude Lorraine gazed hour after hour, morning, noon and midnight, upon the pictures which the Great Artist tints with immutable hues and profusely hangs on earth and sky, mountain and dale. Happiness is the reflex accompaniment of the normal condition and action of the faculties of our nature in harmony among themselves and with the universe.—*New York Tribune.*

Old Probabilities.

Brigadier General Myers, chief signal officer of the army, in his annual report, which has been submitted to the Secretary of War, says:

Since the date of the last annual report, sixteen additional stations of observation and report have been established. Of this number seven are within the territory of the United States, near the one hundredth meridian, and nine are upon the Atlantic coast, being stations of the coast service of the office connected with the life saving stations. Reports by courtesy of exchange received from six additional stations established by the authorities of the Dominion of Canada, and within the Dominion. The total number of daily reports now had by exchange from the Dominion is fifteen. In pursuance of the plan entered upon, at the request of the chief of the Dominion meteorological office, warnings of approaching dangerous storms are habitually telegraphed from this office to Toronto. The display of signals by the Dominion authorities is based upon these telegrams. The friendly relations thus maintained between the two services are to benefit both. The stations this year established in the West Indies are extended far southward and eastward to the Barbadoes and the Windward islands. Thence the long line of guardian points runs with few breaks, and these each month decreasing past the capes of Florida, and, following the Atlantic coast, stretches to the distant northeast of Farther Point and Halifax, near the southern extremity of this line. The experience of meteorologists has located the frequent origin of cyclones which sometimes sweep in a single course through the islands and over the whole eastern portion of the United States in the vicinity of the seas. The service of the West Indian stations has yet something of the imperfection due to their recent establishment. The telegraphic communication by cable between them has been but for a short time accomplished, and it is frequently interrupted. The observers can not be held to that rigid rule which makes the regular reports of the service throughout the United States at once prompt and reliable. The delay of the distant reports, even for a day, does not, however, always destroy their usefulness. The time of the movement of any storm may last for days after its ravages have commenced and been reported. As time goes on and the work takes permanent shape, when reports shall be regularly received at the hours due, and their indications understood by tried experience, it seems almost impossible that the great hurricanes which pass the stations, and are watched thus from the beginning of their course, should precipitate themselves unheralded on our coast, or reach them without such warnings given as will enable those who heed them to shun their force. The display of cautionary signals at Key West has been justified by the existence of those stations, and is ordered. The accuracy of similar displays will be increased at all the coast stations thence northward. The class of tempests which have their origin at sea or among the West Indies, seem to pass thence upon the Gulf of Mexico, and coursing northward over the Gulf coast of the United States to move over the southeastern interior of the sea coast, or, reaching the valley of the Mississippi, are traced in their course until they reach the great lakes, will sometimes equally evoke at their origin and in their first movement the warning reports of these stations. Later the changing reports of the Gulf coast stations ought to give indications of their coming. A storm once originated and on its course, once fairly within the scope of the stations of the interior, the study charts of the office can hardly fail to indicate in their ceaseless sequence the place of its extent and something of its probable march. On the eastern coast itself, the sea coast, the service stations of this office, in connection with the life saving service, and located in the life saving service stations, have been established during the year at intervals upon the sea shore from Sandy Hook to Cape May, and from the dreaded Cape Hatteras to Cape Henry, the telegraphic wires connecting each station with this office. In addition to the regular tri-daily meteoric reports these stations report tri-daily the condition and character of the sea swell and its direction from the time a storm in movement upon or near the coast reaches one of these stations, or the sea swell, which sometimes so far foreruns the storm, begins to break there with notable violence. It is possible to hear of the storm's progress from hour to hour. It is during the past year and at these stations that the study of the sea swell has been first commenced in the United States for such purposes of premonition. There has been, until the establishment of this service, these stations and these lines, no facilities by which such knowledge could be made available, or the facts carefully and systematically studied, in reference to their possible practical value. The hope is not without foundation that as this chain of stations extends, and the stations are perfected, such a knowledge of premonitory facts, and of conditions actually existing on the sea cost, will be had as will enable the coasting trade of the United States, as well as the sea commerce from the larger ports, to be warned in time against dangers of the sea to which they are now exposed. The coast station at Cape Hatteras is, on account of the frequent storms in its vicinity, regarded as of especial importance. The added stations secured in the Northeast and Canada enable a better care to be had of the New England and Northeastern coasts, and will in time teach something of the disturbances which, passing to the northward of the northern limits of the United States, have been hitherto too soon lost from the study charts to admit of their being properly examined. In the seasons of approaching frosts and in those in which markedly low temperatures accompany high barometric pressures, extending slowly southward, the indications here first noticed permit information valuable to agriculture and other interests to be given. The additional stations in the far northwest furnish added facilities for the work for such prognostication, besides answering the immediate purposes of their location—that is, to enable a more complete study to be had of disturbances which are first noticed in the Norhtwest. These stations failing to approach the western lakes without being so soon perceived, the line of stations west of the Mississippi has been pressed steadily westward along the whole length of the Mississippi valley. Each of these stations increases by its reports the value of the whole system of reports, and each aids in the long study which must be had before the meteoric condition over the vast plateau of the western interior stretching north and south to the limits of the United States, east and west, until it closely approaches the Mississippi valley and Pacific coast, can be fully understood, or the indications to be had from the change there be rightly combined with those exhibited at the stations lying to the eastward and at lower levels for the studies incidental to the duties of this office. It is by the western limit of stations here described that more accurate studies are now limited. There has been no increase of stations upon the Pacific coast, the distance, the difficulty of telegraphic communication and the small sums appropriated for the service having rendered it hitherto almost impracticable to make one. The opportunities are, hwever, greatly improving with the extension of the military telegraphs in Arizona and California. It is contemplated to make the stations upon these lines reporting stations as rapidly as they are occupied by the signal service. The stations on the Aleutian islands, half way across the Pacific, has been continued, and a station has been established at St. Michael's, Alaska, to make a connection as closely as possible with the Russian system of meteorological observation. The preliminary action has been had for the record and wording of simultaneous observations to be taken at the Sandwich Islands and on the Bermudas. A brief reference was made in the last annual report to the benefits hoped to result from the proceedings of the Vienna Congress of meteorologists, which had then very recently terminated its session. A proposition to the effect that it is desirable with a view to their exchange that at least one observation of such character as to be suitable for the publication of synoptic charts be taken and recorded daily and simultaneously at as many stations as practicable throughout the world had been unanimously adopted. This office had already entered into correspondence requesting exchanges of such reports with different officers and institutions representing different nations. The assent of the meteorological service of Russia was that first had, and has been followed by that of Turkey, England, Austria, Belgium, Denmark, France, Algiers, Italy, the Netherlands, Norway, Spain, Portugal, Switzerland and the Dominion of Canada. The concurrence of so many nations, representing a territory covering the larger inhabited portions of the northern hemisphere, seems to put beyond question the ultimate success of the undertaking to secure daily a simultaneous report of the meteoric conditions over the greater portion of the earth's surface. Time is only needed to extend the co-operation to countries which have not yet entered upon it, and to develop the system of similar observations already commenced by the office upon the sea. The opinion has become so general among scientific men that it is necessary to study the atmosphere of the earth as a unit and the prospect of valuable discovery is so fair that skilled and energetic colaborers are found wherever the request was made. The seacoast service of the signal service, in connection with the life saving service, has grown steadily in importance. The act of Congress requiring this service contemplates the establishment of signal stations at life saving stations and lighthouses at points along the coast in such manner that the coast and the sea in their vicinity may be kept at once under observation, warnings of approaching storms to be given to vessels within signal distance, and information of disasters and other incidents occurring be rapidly given to the chain of life saving stations and to the central office. An advantage incidental to such duties is that they permit communication to be had by signal with vessels passing in sight in any station. A naval vessel appearing off one of the signal stations can transmit a communication to Washington or receive orders in cipher or by signal. In time of war, with the system completed, no part of the coast could be menaced without instant knowledge at the great centres, at headquarters, along the coast, or throughout the country, if need be, of the character of the menace and the locality. In time of peace, if desirable for commerce, a record can be kept of passing vessels showing their signals, or brief messages can be signaled to or from them. As the lines and stations are extended in pursuance of law, these advantages, now limited to the Atlantic coasts, will reach also the shores of the great lakes, the gulf coast and the coast of the Pacific. The work of extension must be slow—perhaps the labor of years. The results to be had are worth both the time and the labor. The chief signal officer urges earnestly and in sound argument upon the Secretary of War the need of some form of more permanent organization to continue with improvement in the line of duty marked out, and recommends that it be sought of Congress that it be enacted that the President be authorized to detail or appoint eight officers assistants to the chief signal officer, with the rank and pay of captains, and eight with the rank and pay of first lieutenants, while serving. He also recommends that the pay of enlisted men of the service be made equal to that of the most favored enlisted men of the army. The report concludes as follows:

"The popular support, and the support of the press, so long and generously given, have been continued, the criticisms of the latter having been temperate and willing to be easily satisfied, and legislation has been favorable. To aids like these, and those which the Secretary of War has found it his duty to render, the advance of the work has been due. There seems no difficulty to be encountered in the future greater than has already been met in the past. The opportunities for rendering public good have been widened as the service has extended, and the limits to the bounds which it is possible to attain can not be estimated."

Dr. Holmes on Preachers at Deathbeds.

The Springfield, Massachusetts, *Union* says: Dr. Oliver Wendell Holmes is evidently a convert to the doctrine of euthanasia, or the right of moribund persons to the assistance of anæsthetics in procuring a painless passage out of this life. In his recent address before the Harvard Medical School, the doctor said that it was the duty of the physician to make dying for his patient as nearly as possible like the closing of the eyes in sleep. When, says he, the end is evidently near, "it remains for the physician to claim for his art the right of procuring a painless passage out of the world, so far as practicable, for the patient whom he can keep no longer in it; and without doing violence to the properties of the closing scene, to consider the physical process as one which should be under his exclusive direction." The spiritual adviser will contest this claim, holding that where the doctor has done all he can for the body the clergyman should have a chance to do something for the soul, but in this controversy we presume the patient would generally side with the doctor. For the past eighteen hundred years the priest and the physician have, with tolerable respect for each other's claims, shared sick humanity between them, and this proposal of Dr. Holmes virtually to banish the spiritual adviser from the deathbed is another sign of the aggressive warfare of science on religion in these days.

It is said that no postmistress has ever yet proved a defaulter to the government.

MAJOR HOWELL'S REPORT.

Among the most interesting papers submitted to Congress at its opening is that portion of the War Department's report which includes Major Howell's report to the chief of engineers. For several years, now, Major Howell has been stationed in this department, in charge of government work, and in that time has performed much valuable labor. An idea of the magnitude and importance of this labor may be obtained from the following summary of his report:

Officer in charge, Captain C. W. Howell, corps of engineers, having under his immediate orders the following officers of the corps of engineers, viz: Lieutenant H. M. Adams, from July 1, 1873, to June 1, 1874; Lieutenant E. A. Woodruff, from July 1, 1873, to September 30, 1873; Lieutenant C. E. L. B. Davis, from July 1, 1873, to June 30, 1874; Lieutenant James B. Quinn, from July 1, 1873, to June 30, 1874.

1. *Improvement of the mouth of the Mississippi river, Louisiana, at Pass-a-l'Outre.*—From June 30, 1873, to June 30, 1874, a channel from seventeen to twenty feet deep was available each day at high tide at Pass-a-l'Outre.

The act of Congress, passed at its last session, giving the Secretary of War control over the use of the channel in course of improvement, though not yet enforced, has had a beneficial effect. Regulations, provided for by the act, will be established and enforced during the present year, and, it is thought, will result in preventing blockades.

In connection with the improvement of the mouth of the river, whether by canal, jetties, or dredging, numerous surveys, borings, and measurements have been made, the results of some of which have been reported from time to time as the work progressed. This field work has not yet been completed.

2. *Removing the Raft in Red River, Louisiana.*—A navigable channel through the whole length of the raft was obtained in November, 1873, since which time work has been directed to the removal of the remaining portions of the raft and to clearing the banks of the river where necessary, to prevent the reformation of raft and the deposit of new obstructions from caving banks.

3. *Improvement of Tone's Bayou, Louisiana.*—The raft dam reported in course of construction last year was completed and remained in place during the year, but produced no apparent useful effect; the bayou under it deepening and permitting quite as great discharge as before its introduction. It appears that the total closure of this bayou will alone effect the end desired—that of improved navigation in Red river below Tone's Bayou, the cost of which is estimated at $20,000.

4. *Improvement of Cypress Bayou and construction of dams and dredging at the foot of Soda Lake, Texas and Louisiana.*—Work on the former was continued throughout the year when rendered practicable by the stage of water in the bayou, and resulted in widening, deepening, and straightening the channel from Jefferson to a point below Smithland.

Further examination was made at the foot of Soda Lake, and a plan for improvement projected, which, from its character, could not be commenced with the insufficient appropriation available.

The officer in charge submits estimates for the next fiscal year amounting to $372,580.

5. *Improvement of Calcasieu Pass, Louisiana.*—This work was completed January 13, 1874. It has benefited a large lumbering interest in Southwestern Louisiana.

6. *Improvement of the Harbor of Galveston, Texas.*—Captain Howell submitted a report upon the results of the survey he had been directed to make for the purpose of determining and estimating the cost of some plan of improvement calculated to give an eighteen foot entrance to this harbor.

As the method of construction proposed by him is in some degree new, and involves a large expenditure, it was deemed advisable to refer his report to a board of engineer officers for opinion thereon. These reports were transmitted to Congress at its last session.

The appropriation of June 23, 1874, will be expended in accordance with the recommendation of this board, but only so far as to test the merits of the plan. It is hoped a result may be presented early in the next session of Congress, when estimates for the prosecution of the work will be submitted.

7. *Improvement of Red Fish Bar, in Galveston Bay, Texas.*—This work contemplates widening, deepening and lengthening the cut through Red Fish bar, to meet the growing wants of commerce.

8. *Survey for the location of the terminus of the Fort St. Philip Canal under the lee of Sable Island.*—The survey of 1871 and 1872 gave the data for considering the location, except, first, borings and soundings along the line of probable location of the trunk of the canal; and second, for inclosure of Grand bay. These are now given by Captain Howell.

Captain Howell was charged with and has completed the following surveys:

Of the Neches and Angelina rivers, Texas; Pascagoula harbor, Mississippi; entrance of Matagorda bay and the channel of Indianola, Texas; Bayou Lafourche, Louisiana, from the Lafourche Crossing to the mouth; from the mouth of Red river dowd Atchafalaya river to Brashear, Louisiana. The survey for connecting the inland waters along the margin of the Gulf of Mexico from Donaldsonville, Louisiana, to the Rio Grande, Texas, in compliance with the provisions of the act of March 3, 1873, is in progress, but owing to its great extent, not yet completed.

Southwest Pass during the year retained its normal depth, and was much used for light draft vessels.

Attempts in February and March to pass deep draft vessels resulted in the usual blockade, which was maintained until a considerable fleet had been collected inside and outside the bar.

As during this time Pass-a-l'Ooutre afforded a good channel, the parties controlling the fleet were finally forced to transfer it to Pass-a-l'Outre, where it passed the bar with but little trouble, as it might have done a month previous.

Leaving Southwest Pass in its normal condition and improving Pass-a-l'Outre permits a course of action that will greatly aid in preventing blockades, viz: the sending of all vessels not drawing more than sixteen feet to the former, and all deeper draft to the latter.

In this way a rush of vessels at particular seasons will be avoided at either pass, and greater care can be observed in selecting times and tides for crossing.

For the past few months this course has been partially followed, the local interests at Southwest Pass drawing to that place nearly all vessels of the lighter drafts, while the representatives, in New Orleans, of the commercial interests have insisted on having their deep-draft vessels taken to Pass-a-l'Outre.

The result has been very satisfactory.

Both dredgeboats were repaired during the year, and at its close both were in good working order and employed on the bar.

The McAlester will need but slight repair this fall to put her in condition to work throughout the year.

The Essayons will need greater repairs, and next year must be thoroughly overhauled.

The end-dock, steam launch, and barge are in good order.

Surveys were continued as heretofore, but the field of survey greatly extended so as to cover the bars at Pass-a-l'Outre, South Pass and Southwest Pass several miles seaward of their crests, and the heads of the passes.

The work will be continued as heretofore.

Both dredges will be kept at Pass-a-l'Outre during the summer with but one crew.

In October the McAlester will be repaired and put on duty at the bar. The Essayons will then be brought up, repaired and retained in port until the river rises. Afterward, both dredges will be kept at the bar.

Should it prove advisable, one boat will be sent occasionally to Southwest Pass to keep the channel there in fair condition for the passage of light draft vessels.

The work is not susceptible of permanent completion.

It is located in the collection district of New Orleans and near the lighthouse at Pass-a-l'Outre.

The recent legislation giving the Secretary of War authority to establish and enforce certain regulations governing the use of the pass improved, although regulations have not yet been drawn, has already had a beneficial effect. The facts on which it was based are not generally known, and and the monopoly at which it struck was in a position to overawe its victims. This is now changed. The monopoly has been broken down, and in its place we have a very promising opposition in the towage business.

Pilots, ship masters and ship agents are resuming their proper authority, and understanding the necessity for a system of laws to govern their action, that looks to the general good rather than the aggrandizement of a corporation, are acting now very much as they should. For example, many pilots are taking greater pains to familiarize themselves with the channel; masters frequently wait for a high tide when their vessels are deeply laden; agents of steamers, when it is necessary, take towboats to insure crossing the bar without detention, and the towboat companies are willing to render [illegible] assistance without waiting for the vessel to get hard aground.

These are but a few indications of a growing, healthy, commercial sentiment, which, properly fostered, will make dredging as beneficial to commerce as it may be made, and place the efforts of the government at their proper value.

The depths of channel given in this report, it should be observed, have been obtained by reducing the actual soundings to the plane of extreme low tide for the year. This departure from the usual rule, adopted in hydrographic work of reducing to mean low tide, was made for the purpose of inducing greater care on the part of persons using the channel, and has, I think, been of practical benefit.

I have not worked up my records from self-registering gauges so as to ascertain how far the plane of extreme low tide is above that of mean low, but an inspection of the records indicates that the difference is between eight and ten inches.

Great care has been taken in making the soundings, men being employed who have, by constant practice, become expert and give the surface even where the bottom is softest.

Mushroom leads have been used, and their length not included in the measurement of the sounding line—this length is about four inches. The lines were the best close-laid attainable in this market. These have been wetted, thoroughly shrunk and measured each time before using, and after using remeasured. The depth reported is the least depth obtained by cross, diagonal and longitudinal soundings between buoys located by triangulation; in many cases but one, two or three soundings for this least depth have been obtained from the whole number of from 600 to 800 soundings made in the channel. The width of channel reported is also the least width.

This statement goes some way toward explaining why vessels drawing from two to four feet more water than reported in the channel have passed the bar without detention.

Adding to the depth reported, the height of tides as shown by the preceding table, and one foot for semi-fluid mud, gives the actual commercial value of the channel.

For example, in February, the depth reported was from 16 to 16½ feet x tide 2 feet = 18 to 18½ x 1 foot mud = 19 to 19½ feet. During this month a twenty foot vessel was delayed 146 hours, one drawing less than fifteen feet ten hours. No other vessels were delayed.

The twenty-foot vessel (a steamship) delayed had a jury rigging for her rudder and grounded because unable to steer properly.

A sailing vessel drawing nineteen feet seven inches, with the same depth of channel (sixteen feet six inches), passed out a few days ago with but two hours' detention.

With the dredges now employed, and the manner of obtaining and reporting depth and width of channel, my reports do not show the maintenance throughout any one year of a channel eighteen feet deep and 300 feet wide. Depths from seventeen to twenty feet at extreme low tide are frequently reported, but never a width of 300 feet for those depths.

Yet it was reported that in 1859 and 1860, for a whole year, a depth of eighteen feet and a width of 300 feet was maintained by simply dragging harrows and scrapers over the bar at Southwest Pass, at a cost of only $60,000. Also, that under the contract of Craig & Rightor the same depth and width was obtained at Southwest Pass and Pass-a-l'Outre, the latter by exploding a few hundred pounds of gunpowder on the bar.

My experience on this work during 1869, 1870 and 1871 convinced me that there was something wrong about the measurements on which these reports were based. If not, then we were spending $150,000 a year with a plant worth $500,000, when as good results might be obtained for $60,000 a year.

I investigated the matter. I questioned pilots, towboat captains, shipmasters and employes of the contractors who received pay for the results reported. The information so obtained could not be put in shape for report, for the reason that while the men interviewed would freely tell me what they knew they were unwilling to sign written statements. A few months ago a suit for libel was brought against me by the Towboat Association, which offered an opportunity to bring this testimony out; but the suit was withdrawn and costs paid by the plaintiff.

In view of the fact that I have satisfied myself that the depths and widths of channel reported in 1853, 1857, 1858, 1859 and 1860 have been erroneously reported, it seems proper to state my grounds for belief.

There are many tricks about sounding that, while generally known to seafaring men, are unknown to or escape the observation of the most conscientious and careful inspectors. I will explain some of them.

There are various qualities of lead lines; all shrink more or less on being wetted.

Experiments I had made with several qualities found in this market resulted in showing a shrinkage of from six inches to two feet in a length of twenty feet. An inspector who does not select his lines and measure them himself when thoroughly wetted, neglects a prime precaution against getting wrong results.

There are various shapes and sizes of leads suited to different kinds of soundings.

When the water is only about twenty feet deep and the bottom soft, as at the mouth of the Mississippi, accurate results can only be obtained with a light, flat lead, since a long lead, and especially a heavy one, though well thrown, will sink a great part of its length into the bottom, and, whether the lead line be measured from the lower or upper end of the lead, wrong results are obtained. Then much depends on the honesty of the leadsman. Even when the water is smooth, it requires an experienced and close observer to determine if he be not calling from six to twelve inches more or less than the actual sounding. In rough water it is yet more difficult to detect error of this kind, since the the leadsman himself must average the rise and fall of the waves to give the true sounding.

It will be seen from this, how, even ascribing to contractors and leadsmen average honesty, and to inspectors average knowledge of and attention to what has been stated above, erroneous results may be obtained.

Returning to the works of 1853, 1857, 1858, 1859 and 1860, all my informants agree that those works at no time afforded a channel more than sixteen feet in depth at mean low tide. Why was a greater depth reported?

The contractors provided the leadsman leads and lead lines; the leads wer long and heavy, such as used for off-shore soundings; the lines were measured dry, and from the lower end of the lead; the soundings were often taken from the bow of a steamer, with the inspector in the pilothouse, watching the leadsman as well as he could, recording the calls, and his attention distracted as much as possible by the conversation of persons about him.

In one case they were taken from boats, one on either side of the steamer, at a distance of 150 feet from the latter, with the inspector on the steamer.

These soundings, it was thought, were verified by triangulation, the inspector and his assistant using the instruments from stations on mud lumps distant from the channel, while soundings located were made from small boats by the contractor's employes.

My informants were, some of them, at the time cognizant of the fact that the inspectors were being systematicrlly deceived, as I have indicated.

I give the statement of a master of a dredgeboat, as near as I can remember it, as a sample of my information:

We had a channel between fifteen and sixteen feet deep; the contractors reported it eighteen feet deep and called for inspection. I was notified that the inspector would be down on a certain day.

I selected the most loosely-laid lead line I had and stretched it over the boiler of the boat, fastening it at one end and attaching a weight at the other.

When the inspector came aboard, the line was thoroughly dry and stretched. Our other lines were put out of sight. The inspector took our prepared line, carefully measured and marked it himself. We then ran down to the bar. As we neared the bar the leadsman was instructed to take soundings in water that we knew was over eighteen feet deep, ostensibly to show the depth above the bar, but really to wet the line so that it would be properly shrunk before using on the bar.

We then sounded back and forth through the channel, the inspector standing by the leadsman and watching every throw, as if he thought he could judge from mere sight whether the leadsman was throwing and calling honestly or not. There resulted the reporting of a channel over eighteen feet deep at mean low tide, when there was really not a channel sixteen feet deep.

The result not only deceived the inspector, but exceeded my expectations, as I had taken pains to impress on the inspector the fact that shoaling in the channel was rapidly effected, and that a little less than eighteen feet might possibly be found for one or two soundings. This was the subject of remark after completing the inspection, but the inspector did not think of again measuring the lead line, nor would such a course have enlightened him, for as soon as the soundings were completed I had it put out of sight and another line exactly like it and properly measured substituted for it.

This is the substance of what one witness stated to me in conversation.

This *expose* appears necessary to put the work of to-day in its proper light when comparison between it and past work is attempted.

It may also suggest to future inspectors some points of value.

The following report is made of the survey for locating the terminus of the Fort St. Philip canal under the lee of Sable island:

This survey was projected on the following suppositions:

First—That a sheltered harbor excavated under the lee of Sable island with a breakwater located on the shoal ground to the northward, if practicable, would be preferable as an entrance to the projected canal, to an entrance projected from the front of Sable island directly into the throat of Breton island pass.

Second—That by inclosing Grand bay a tidal reservoir might be established, receiving and discharging through the entrance to such harbor and thus creating currents sufficiently powerful in scouring effect to maintain the depth of entrance given to the harbor.

Third—It was assumed that this direction given the entrance would necessitate artificial works interfering the least with the flow of tidal currents through Breton Island Pass; that protection of the west end of Breton Island would be perhaps rendered unnecessary, and that a breakwater on the shoal between the east and west forks of Breton Island Pass, while protecting the eterance to the harbor from the north, might be so planned as to deepen and lengthen the west (or harbor) fork.

Fourth—It appeared evident that the entrance, so located, could be better protected by fortification on Sable island than if located at any other point.

The survey of 1871 and 1872 gave all the data for considering this location, except—

First—Borings and soundings along the line of probable location of the trunk of canal.

Second—For inclosure of Grand Bay.

These data are now presented in the following report and on the chart herewith:

UNITED STATES ENGINEER OFFICE,
New Orleans, May 25, 1874.

SIR—I have to make the following report on the "survey for locating the terminus of the Fort St. Philip Canal under the lee of Sable Island." The survey was commenced March 19, 1874, and the field-work was finished April 22, 1874.

The triangulation, soundings, level line, and sections of borings, have been plotted on a single sheet, which is submitted herewith.

A tide-gauge was established at Camp Howell, in Mississippi river, and another near station six, in Grand Bay. A level line has been run from Camp Howel to station two, and from stotion two to the tide-gauge in Grand Bay. Taking high water of 1874 as the plane of reference, we have plotted the section of the proposed route so as to show low water in Mississippi river, 1872. Its reference is 6.45 feet.

Extreme high water in Grand Bay, for time covered by survey, 2.13 feet.

Mean low water in Grand Bay, for same period, 5.40 feet.

Extreme low water in Grand Bay, for same period, 7.03 feet.

In order to preserve the record of this work five bench marks have been established.

Bench mark No. 1 is the top of a stake at the northwest corner of the house at Camp Howell. It is 0'.66 below the zero of the gauge at Camp Howell, and its reference is 0'.76.

Bench mark No. 2 is the top of a piece of one-inch round iron, driven into the end of a yellow pine stick, 3' by 12" by 12", buried in the ground and standing upright near the northeast corner of house at Camp Howell. It is 4'.85 from the northeast corner of the house, and 15'.45 from the northwest corner of the house. This bench mark is 1'.03 below the zero of the tide gauge at Camp Howell, and its reference is 1'.13.

Bench mark No. 3 is the head of a ⅝x16-inch iron bolt, driven into the end of a cottonwood log, three feet long, buried in the ground, standing upright, near the southeast corner of the house at Camp Howell. It is 6'.05 from this corner and 16'.05 from the southwest corner of the same house. The bench mark is 1'.83 below the zero of the tide gauge at Camp Howell, and its reference is 1'.93.

Bench mark No. 4 is a stake 82'.5 from station 6, in the direction of station 2 (see chart). The top of the stake is 2'.36 below the zero of gauge in Grand bay. Its reference is 3'.99.

Bench mark No. 5 is the head of ⅝x16-inch iron bolt, driven into the end of a cottonwood log, 3' 15", buried in the ground, standing upright, 49' from station 21, in the direction of station 2. This bench mark is 2'.49 below the zero of the gauge in Grand bay, ahd its reference is 4'.12.

Seven borings have been made, four to a depth of 100', 1 to 97', 1 to 79', and 1 to 44'.

The sections of the different strata are shown on the next sheet.

The specimens, 56 in number, are properly numbered for each boring, and the depth from which the earth is taken is indicated on each specimen. The location of each boring is indicated on the chart.

A hydrographic survey has been made of Grand bay. This work can be added to our general chart by reducing the scale to 1:30,000.

I have estimated the amount of excavation for the proposed route from the end of lift-lock to 27 feet water in the gulf.

Width of canal at bottom, 200 feet; depth at extreme low water, 25 feet; depth at mean low water, 27 feet (26.63). Side slopes ¼.

The outer end of the canal to be 1000 feet wide for a distance of 8075 feet. Total excavation in cubic yards, 10,203,915.

I have also estimated for the breakwater and jetty, indicated on the general chart.

Breakwater—Breakwater to have a section similar to the construction at Rotterdam, length 11,600 feet; depth at east end, twenty-one feet; depth at west end, fourteen feet; width at top, east end, thirty feet; width at top, west end, twenty feet; cubic yards, fascines and ballast, 368,479; cost, at $5 per cubic yard, $1,842,395.

Jetty—Length, 11,100 feet; depth at outer end, eleven feet; cubic yards, fascines and ballast, 87,704 feet; cost, at $5 per cubic yard, $438,520.

Sections of the bayous, on the south side of California and Grand Bays, have been made as directed by you.

Each section is lettered, and the corresponding letter on the general chart indicates the approximate location of the section.

Very respectfully, your obedient servant,
H. M. ADAMS,
Lieutenant of Engineers.

Captain C. W. Howell, Corps of Engineers, United States Army.

The work is located in the collection district of New Orleans, near Fort St. Philip, Louisiana, and the nearest lighthouse is that at the head of the passes.

The Postal Telegraph in England.

We were suddenly introduced in the great hall on the last or fifth story of the general Postoffice Department at St. Martin's-le-Grand, where the chief work under the system which has produced these results is performed. It was a magic scene. This was the "Provincial gallery," a spacious and lofty apartment, well lighted and ventilated. At first it looked like a vast concourse of sewing machines, all at work at the same moment. The superficial space occupied by the instruments and staff is 20,000 square feet, while the space occupied by the desks extends nearly three-quarters of a mile. From these data you can imagine the extent of this vast and incomparable hall. The number of persons employed in this one gallery is about 700, at least three-fourths of them females. The whole number of persons employed in the whole station, on all the floors, is nearly 1500 of all classes, and where upward of 30,000 messages have been dealt with in a single day. Of these 1500 employes 500 are male telegraphists, 700 female telegraphists, 200 messengers and the remainder engineers, mechanics, etc. The great feature is the prominence given to female labor. Less than 300 clerks were employed in the central office under the new companies, but now the number has increased to 700. A more pleasing sight than these 700 young persons busily employed on the work of the nation can hardly be conceived. The occupation seems to be thoroughly congenial to them, and from the dignified lady superintendents down to the "sweet girl graduates with golden hair," who can scarce do more than lisp their telegraphic alphabets, all seem to have been imbibed a large share of that enthusiasm which characterizes the presiding genius of the department.

We have here female telegraphists in every stage of development, from the coy little maiden, who flits noiselessly about among the instruments and collect the messages, and the "sweet girl operator with golden hair," about to take her "degree" in the "art" of performing, to the full-blown Wheatstone operator, and the clever and accomplished lady clerks in charge, who preside over all. The cheerful and satisfied air which pervades the whole female staff is evidently due to the superior consideration which has been shown by the department for their comfort and accommodation. Dining, retiring and cloak rooms are provided, while privacy and decorum are amply secured by separate entrances and exits being provided for the male and female staffs. It is not a little amusing to watch at 8 P. M., when the duties change, the constant stream of females out of the galleries by one door, and the opposite streams of males inward by another, for it is considered a misdemeanor for the members of the different staffs to exchange conversation with each other within the building.

The male clerks are employed chiefly on night duty, which is worked by different relays, commencing at 8 P. M. and finishing at 8 A. M. The female clerks do the duty during the corresponding hours of the day, in sets, working eight hours a day, or longer, if necessary, on over-time payment. The pay of an average male clerk in this office is 25s a week, equal to $7 50, and that of a female 14s to 16s a week, and the rate per hour for "over time" varies from 4d to 9d, according to the scale or weekly pay. It need scarcely be stated that the postoffice has added largely to the number of employes of both sexes in Telegraph street since it acquired control of the telegraphic system. The female additions have been five to one, and for that Mr. Scudamore deserves well of his country for the very liberal encouragement which it is well known he is disposed to give to the increased employment of female labor in telegraphy. It is said the number of females employed by the Postoffice Department, in all its offices under the new system, amounts to 3000. Few of my readers will have known that the American example in this respect has been so generously followed by Great Britain, and all will be impressed by the difference in the compensation paid by the two countries. I think the lowest salary paid in Washington to females is $10 per week, and some range as high as $1000 a year, while the average is $700. It will be seen that the hours are also shorter in America. A lady department clerk in Washington rarely works longer than from nine to four, while her English sister is occupied, as I have shown, from eight to eight. But it can not be denied that the latter has certain advantages of her own. She buys what she eats and wears at astonishingly low rates, and she is rarely disturbed by the cry of economy, or, so far as I can learn, by the foul breath of calumny. It seems to be the general verdict, confirmed by my own brief observation, that the women at the railroad restaurants, at the best hotels, at the theatres, and in the shops or stores, are unusually well behaved and intelligent. The subject of female employment is one of great and growing importance and difficulty, and it is the duty of the government to grapple with it boldly. England is in advance of us in many respects outside of government, where America may be said to have taken the lead. But here you may see females filling many stations occupied by men in our country. They are clerks and book-keepers in all the hotels and inns, in shops and in stores. They are hair dressers in the same establishments with men. They are often guides in the show palaces of the nobility; thousands are artisans, and as school teachers they find occupations at prices almost equal to those paid in the United States. As I have said, they are barkeepers everywhere, and, of course, servants in private houses. The characteristic of the average English woman who works for herself with brain or hand is obedience to her superiors. The growing evil with us, the utter insubordination of the servant class in the great cities, is felt here, but only in a mild form, and this is the more surprising considering again the very marked difference between the wages paid to servants in the United States and in England. In London there are thousands who get no pay at all from their employers. They live by what the guests in many of the hotels and boarding houses may choose to give them. This is so at the Criterion, the new massive restaurant at the foot of Regent street, which is crowded day and night, and is one of the fresh curiosities of London, and at many other great resorts. It is a bad system, I admit. It necessitates a deal of disgusting begging, and I have often said I was happy it was not yet a practice with us; but there is no insolence, no coarseness, no profanity. Perhaps there is too much deference to rank and money, as is the case with many—indeed, with all—in the middle class, and we know that nothing is so contagious as a bad example; but it is in disagreeable contrast to the rudeness too common in the corresponding class in America.—*Letter from Colonel Forney.*

Portland Waking Up.

An American Press dispatch from Portland, Maine, dated the eighth, says:

At a meeting of the city government last evening the committee on wharf facilities made a report commending the purchase of Galt's wharf, at a cost of $80,000 in gold, for the use of the Grand Trunk railway, in its ocean traffic. It will cost $50,000 to put the wharf in shape. The Grand Trunk Railway Company has agreed to purchase the property from the city, and also to build immediately an elevator and sheds. The company furthermore promises to make Portland the distributing point for Maine, and parts of New Hampshire, Vermont and Massachusetts. With this end in view the company has made a discrimination in the tariff rates in favor of Portland.

A Large Trip Hammer.

The largest trip hammer in the United States has recently been completed at Nashua, New Hampshire, at an expense of $75,000. The weight of iron used in it is about 200 tons. The ram weighs twelve tons, its striking force is about 100 tons, and four large boilers are brought into use to furnish steam to run the six hundred horse power engine required to successfully operate it. The immense crane, with which the iron that is manipulated, is hoisted into position, is the largest in the country, and is rigged with modern mechanism, so nicely that two men can easily hoist fifty tons dead weight.—*Scientific American.*