An Emotional Curve of Literature.

It seems as though psychology is now invading every stronghold of science, literature or art. A graduate student at Columbia University, Mr. Gerrard, has submitted an interesting original thesis entitled "Emotional Expression in Literature," and the results of this method are very interesting. He notes carefully his own emotions while reading literary works and then studies out what passages caused the emotions. These passages were then copied off or cut out until he has a very large number of clippings and memoranda, says The Sun. He noted the number of emotions and emotional elements for each hundred words in the various works or by the several authors. He grouped the clippings in different ways as similarity of themselves or as the emotions they excited suggested, and so eventually perceived what he calls the laws which govern the production of emotions by language or the expression of emotions in written speech. He says in his introduction:

"This work is the outcome of a desire to find the elements used in expressing ideas and emotions in literature; to learn how these elements are used, and to see if, the elements serving as a basis of valuation, some method could not be devised whereby the strength of literary works could be measured. . . . It was early noted that descriptive work used different elements than did narration or character interaction. . . . This discovery of the elements was extremely trying work, since one in seeking must be ever on the alert, must know exactly when the emotion comes to him, and must try to locate the exact part of the passage in which the effect was to be found. This necessitated a high degree of mental and emotional sympathy with the work under consideration, together with enough self-control and introspection so as to be able to judge without being carried away by the work. Once the elements were discovered, the laws governing them began to appear one by one.

"The value and use of the elements has been tested in other ways. A very acrid speech by a Southern Senator deprived of a very few adjectives became extremely pacific."

Of his literary elements he says: "Man receiving sensations from all his senses at one time may unite them and represent the united sensations in one expression; or he may unite them with other stored stimuli and produce an expression resulting from hundreds of stored stimuli. Such an emotion would in literature find expression in a discourse, while several sense impressions from the eye, ear and finger combined would, perchance, produce a noun or a verb; while each sense impression might find expression in an adjective or an adverb. . . . It will be noted that the strength of the ordinary figure of speech is due to the fact that in it the condensation of a larger whole into a smaller one is strongly felt. A verb idea is put into an adjective, or a paragraph idea is put into a verb. A proverb is a condensed drama, a joke a comedy in miniature. Each paragraph was once a whole literary work; each perfect word contains a condensed play. . . . A dramatic moment is a larger whole than is a paragraph. . . . To show the emotion and emotional changes in a work of literature, graphic curves have been made as follows: Taking 100 words as a unit, I have found the number of nouns, verbs, clauses, sentences, paragraphs, or dramatic moments per 100 words. . . . Th se curves show us at a glance in what part of a work anyone element dominates; thus one finds the adjectives, and nouns, dominate in the beginning of 'Marjorie Daw,' while at the climax of the story the verbs greatly preponderate, as again nouns predominate in the anti-climax."

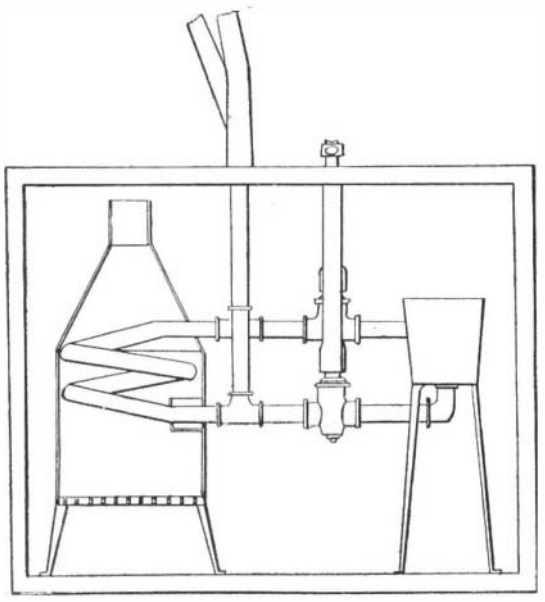
Mr. Gerrard represents graphically, in his thesis, by his curves, the emotional measurements of "Pippa Passes," "Camille," "Magda," "Hamlet," "Desdemona," "Red Riding Hood" and many other works and characters of literature.

A New Polar Expedition.

There are already four polar expeditions under way, or almost ready to start, and to these must soon be added that of Capt. Bernier, a Frenchman. His course will be toward Franz Josef Land, steering for the part lying to the east of Cape Mary Harmsworth, pushing on as far north as possible, and he will then disembark with all the provisions, dogs, reindeer, sledges, etc. He intends to pass the winter at Petermann's Land, which is probably an island lying in about 83° north latitude and 58° or 59° east longitude, that is about 420 miles from the pole. At the first opportune moment he intends to make a dash for the pole. If possible he hopes to cover the 420 miles in 100 days, which is good traveling in this part of the Arctic regions. He expects to return from the pole by a route which will permit of reaching Spitzbergen and he thinks he will reach Dane Island, where Andreé started in his balloon, toward the middle of autumn. If he reaches this point, he will have to spend the winter there, as steamers run between Norway and Spitzbergen only during the warm season. He has an alternative plan of operation by way of the River Lena, and which the "Jeannette" followed in 1881.

THE BRICKILL FEED WATER CASE.

On May 19, Mr. George E. Howard, special master in a suit brought against the city of New York, by the heirs of William A. Brickill, to recover money saved to the city by the use of a patented feed-water heater for steam fire-engines, filed his report in the United States Circuit Court. The master awards the complainants $894,633, of which sum $194,716 is interest. This ends one of the most interesting legal battles for the defense of patent rights which has ever been fought. The case has been in the courts for twenty-nine years, and it is to be hoped that it is now definitely settled.



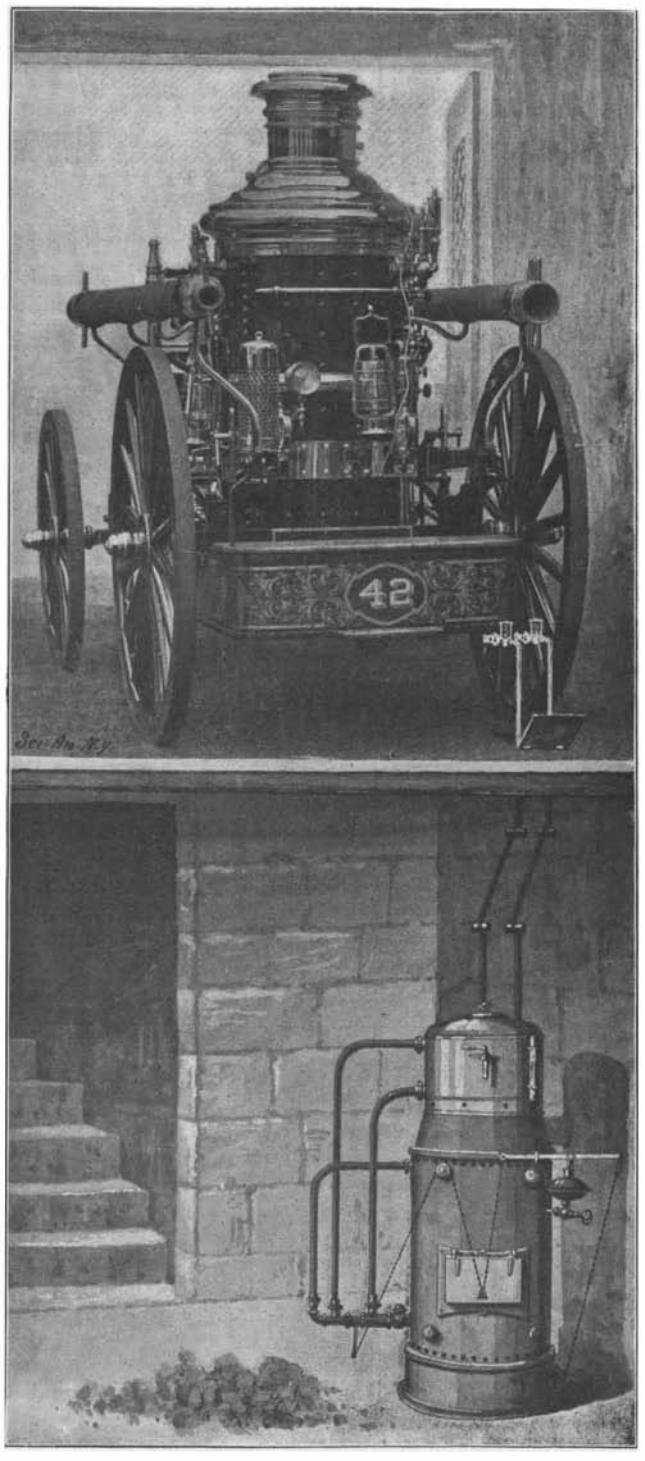
BRICKILL'S ORIGINAL HEATER.

William A. Brickill was foreman in the New York Fire Department. He had been an enthusiastic fireman in the old volunteer days, and when the city established the regular paid fire department, he was retained as an engineer. He was a skillful mechanic, and devoted a good deal of his spare time to perfecting fire apparatus. In 1868 he invented and patented a feed-water heater for steam fire-engines, by which water could be kept very hot in fire-engines without fires being kept lighted under the boiler.

Mr. Brickill left the Fire Department and asked that the city pay him for the use of his patented device. The authorities contended, however, that he did the work while in the employ of the city and that he was doing nothing more than his duty. The patentee entered a suit for damages for infringement of his patent, and the suit dragged wearily on, so that at the end of ten years he had spent all his savings in litigation, and at the end of seventeen years the patent expired. He offered to settle with the city for $50,000, but this was refused, and it is probable that the city will now be mulcted in a large sum.

The device is most interesting, and the decision is important from a legal point of view, as it affects the right of the inventor to the fruits of his invention. It has been decided by the courts that employers are not entitled to the inventions or patents of an employé, unless there is a special agreement to that effect, which was not the case in the present instance. An employer, who has in his pay a skilled workman engaged to devote his time and services in devising and making improvements in articles manufactured by the employer, is not entitled to the conveyance of any patents obtained by the employé, unless there is a distinct agreement to that effect.

Nowadays no engine house where a steamer is located is properly equipped unless supplied with a heater. It is necessary to keep the engine room constantly warm in cold weather to guard against frost, so that some form of heating apparatus is required, and Brickill's invention calls for an attachment to such a heater which would at the same time supply water to the fire-engine boiler very near the boiling point, in order that when an alarm is turned in, the engine can start to the fire, and by the time the scene of the fire is reached, a sufficient pressure of steam has been raised which will permit of working the pumps. Our small diagram shows the original device of Mr. Brickill. Naturally it has been much improved upon as the device shown in our engraving represents an approved form of heater for steam fire-engines. The heaters are usually placed in the basement and are usually made in sizes which can supply either one or two engines. The heater is automatic, coal or coke being supplied to the fire through a self-feeding mechanism. Damper regulators keep the temperature steady and uniform; they can be adjusted so as to maintain any required pressure from the boiling point upward. The steam capacity is from 25 to 50 pounds of steam. The heaters may also be placed on the same floor as the engine, but in the majority of cases they are placed in the basement directly beneath the engine as shown in our engraving.



IMPROVED FORM OF FEED WATER HEATER.

The circulation of hot water in the boiler of the fire engine also tends to prevent the deterioration of the boiler. The pipes usually come up through a trap in the floor, and valves are provided so that the forward movement of the engine immediately closes the valves in the pipes attached to the engine, and also to the heater, and changes the circulation of the water from the engine to the tank on the heater, and opens the damper on the heater when the action of the regulator will at once close the draft. Other devices have been provided, such as valves which are operated by the foot as the engineer mounts the tailboard. If desired, the engine can be run to the scene of the conflagration without lighting the fires, and steam can be rapidly raised if it is found the alarm is a true one. This, however, is not done much in large cities.

Director of Allegheny Observatory.

Prof. F. L. O. Wadsworth, of the Yerkes Observatory of the University of Chicago, has been appointed Director of the Allegheny Observatory. He succeeds Prof. J. E. Keeler, who recently went to the Lick Observatory. Prof. Wadsworth will take charge on January 1, next. He has been connected with the Yerkes Observatory since its opening in 1897, as instructor in astrophysics. He came to the University in 1894, from the Astrophysical Observatory, in Washington.

TESTING SODIUM SULPHITE.—To test sodium sulphite for its chief adulterations, proceed as follows: By adding the few drops of barium chloride solution to the solution of the sodium sulphite to be tested, a white precipitate results. Same must be soluble in hydrochloric acid. If it is not, sodium sulphate is present. If phenol-phthalein paper moistened with sodium sulphite solution is dyed red, sodium carbonate is present.—Deutsche Photographen Zeitung.