factories together with the sheet mill were demolished, at a loss of some $75,000 and seven persons killed and thirty wounded. The boilers had been five years in use. It is stated that the iron was good and that the gages showed plenty of water just before the accident. Portions of metal were thrown for distances of three blocks, crashing through the roofs of neighboring buildings.

Among the incidents of the disaster, it is mentioned that Mrs. Clarke, wife of one of the employees, hearing the noise of the explosion, fell upon her knees and commenced to pray; while in the attitude of supplication, a piece of the boiler weighing 700 pounds struck the house, and went crushing through the room on the line where her head would have been had she remained standing. Another mass of the boiler iron, weighing nearly eighty pounds, went lumbering through the air for a distance of 200 yards, and, descending upon a door of a bakery on Carson Street, crashed through it as it might through a house of straw, and fell upon the middle of the floor. Fortunately, however, though much destruction of property was occasioned, no loss of life here ensued. A blacksmith, named Jacob Broonsinger, who was working in a shop in the vicinity of the explosion, had been standing at a certain place fixing a horseshoe. He stepped over where the horse was, and had just begun to put the shoe on when an immense piece of iron, weighing fully 200 pounds, came crashing through the roof, and fell on the spot where he had been standing a moment before.

We trust that some of our engineering correspondents will send us diagrams and particulars of these boilers for publication.

The third explosion to which we have alluded took place at Geddes' rolling mill, in Syracuse, N. Y. In the latter case, one workman was killed and seven injured. The boiler was new and considered in prime condition. The buildings and machinery were damaged to the extent of $5,000.

MATTHEW F. MAURY.

Matthew Fontaine Maury, formerly an officer in the United States Navy, afterwards of the Confederate Navy, died recently at his residence at Lexington, Virginia, aged 67. He was formerly superintendent of the Government Hydrographic Office, where he elaborated investigations in regard to winds and ocean currents. The discovery of the telegraphic ocean plateau and the indication of good whaling ground is attributed to him. At the time of his death, he was Professor of Physics in the Virginia Military Institute.

AN OLD FRIEND GONE.

The London *Mechanics' Magazine*, after an existence of fifty years, has, as a distinctive publication, disappeared from public view. It has recently been incorporated with a new weekly periodical, of more pretentious form and larger dimensions, entitled IRON, THE JOURNAL OF SCIENCE, METALS AND MANUFACTURES.

We shall greatly miss the familiar face and the regular visits of our excellent cotemporary, which flourished for nearly a generation before the SCIENTIFIC AMERICAN was conceived. The assurances that the new comer, which is to stand in its place, will be more sprightly and occupy a wider field have, for us, no comfort. For over twenty-five years the *Mechanics' Magazine* has been to us a valued friend and counselor in things scientific, and we deeply regret the exigencies that have compelled its final suspension.

We have before us, as we write, the first number of the *Mechanics' Magazine*, which is graced by a prospectus commencing as follows:

"FELLOW COUNTRYMEN:—Almost every class of people in this enlightened country has now a journal or magazine, which attends to its peculiar interests," etc. It then goes on to say that no publication has yet appeared suited for mechanics and artisans. "But the publishers now undertake such a work under the title of the MECHANICS' MAGAZINE, which shall be so cheap that all may buy, and of such value that no one ought to be without it." The price was fixed at 3d. per copy. It was printed in book form, sixteen pages in each issue, and published weekly. The first number was issued on Saturday, August 30, 1823. How vast has been the progress of science and invention since that day!

The front page of the first number of our venerable cotemporary was adorned by a portrait of James Watt, who had then been buried four years. An excellent biographical sketch of the great inventor then follows. The diving bell is next described and illustrated. Then comes a picture of a man flying in the air, with mechanical wings. A list of the new patents granted during the preceding month is then given, six in number, one of which was issued to Steven Fairbanks, of the United States of America, for certain improvements in locks. How to boil potatoes, and choose a carpet, are explained; also an old wife's notions about tea and teapots. How to detect cotton mixed with wool; How to avoid the effects of foul air in wells, and How a philosopher was outwitted, are explained. The latter states that a little girl came to a learned doctor who was busy in his study, and asked for some fire. [This was before the day of matches.] She had nothing wherewith to carry the coals, and the doctor started to fetch something for that purpose. But the little girl, stooping down, scooped some ashes on one hand and placed thereon with the other some live embers and departed. The astonished doctor threw down his books, saying: "with all my learning I should never have found out that expedient."

Jacob Perkins, the American inventor, was at that time in London, and some of his inventions attracted great attention. Among others noticed in an early number of the *Mechanics' Magazine* was a steam engine and generator, worked at what was then considered an enormous, a fearful pressure, namely, 75 pounds to the inch. His assertions that such engines could be safely worked, and with greater economy, were scarcely credited by the scientific people, notwithstanding that he had a ten horse power engine in actual operation.

The successful removal of a brick house to a considerable distance back from the street, in Maiden Lane, forms the subject of a letter from New York. The job was done by a Mr. Brown by means of screws, and his mechanical genius is highly praised.

Brunel's device for tunneling under the Thames is also illustrated and described, and notice is made of the fact that Sir Humphrey Davy had just discovered the application to mechanism of a certain gas, fifteen times heavier than air, which will produce a power fully equal to that of steam. The great obstacle to the immediate use and introduction of the gas is stated to be the difficulty of confining it. But Sir Humphrey expected to be able to overcome the obstacle.

In the number for January 3, 1823, a correspondent, who is so far in advance of the age that he does not venture to give his name, but signs himself T. G., gives drawings and descriptions of a locomotive engine, cars and railway. His article is entitled "Proposition for a General Iron Railway, with Steam Engines, to Supersede the Necessity of Horses in all Public Vehicles." He says:—"The intention of the present scheme is to introduce a more economical and expeditious mode of conveyance than is now in use, for vehicles of every kind, whether employed in the transport of persons or merchandise. It is proposed to supersede entirely the necessity of horse power in all public wagons, stage and mail coaches, post chaises, etc., and to employ in its stead the more potent agency of steam. A careful examination of the drawings now presented to the public, as a plan of a general iron railway, will, it is hoped, clearly demonstrate the ease, safety, and celerity with which vehicles of every denomination, for the conveyance of goods and persons, may be propelled by mechanic power. The six parallel railways which extend the whole length of our inner plate, form a general iron railway, which might run in a direct line from London to Edinburgh, and from London to Falmouth." This proposed railway had three tracks with devices for the lateral transfer of the cars from one track to the other. Each rail was provided with cogs, set below the face of the rail, and cogged wheels on the locomotive were made to mesh with the rail cogs; the engine and train were thus propelled. It had not then been ascertained that the adhesion of the wheels on the smooth faces of the rails would be sufficient, without the use of cog teeth.

DEPARTURE OF PROFESSOR TYNDALL.

We have before us Professor Tyndall's parting words to his many friends in the United States, delivered at a dinner recently given in his honor by many prominent citizens of New York. Through all the lightness characteristic of a post-prandial speech, we recognize the same earnest efforts in behalf of original research, the same powerful appeal to all classes of educated men to aid in the cultivation of science, that were so eloquently maintained in the able discourses now familiar to us all.

It is difficult to take exception to arguments emanating from so distinguished a source, but, while concurring in the belief that men who are willing to devote their lives to the advancement of our scientific knowledge should be supported, free from other cares, we do not fully acquiesce in the opinion that original research would be very materially forwarded by the establishment of an institute on the same basis as the Royal Institution of Great Britain. Records of the past point to the fact that successful discoverers in the great field of science have toiled, not with costly accessories or assisted by abundant means, but have carried out their labors after struggling against the most adverse of circumstances and with the humblest aids.

We are led to infer from the remarks of the learned author that he regards with a shadow of dissatisfaction the position he has taken upon the lyceum stage. He says "look jealously upon the man who is fond of wandering from his true vocation to appear on public platforms. Now and then the discoverer, when he has anything important to tell, may appear with benefit to himself and the world, but as a general rule he must leave the work of public lecturing to others. If our premise be correct, Professor Tyndall, with characteristic modesty, underrates the magnitude of the service he has rendered to science by his public lectures. Great as he is as an investigator, and valuable as the discoveries attained through his instrumentality are, we consider that as a teacher, as an apostle of science sent to awaken a new interest in its truths in the minds of others, he fulfils his true mission; and that, had he secluded himself as he suggests the inquirer into Nature should do, the value of his contributions to our knowledge published by other means would fall far short of the benefits he has already conferred by his matchless elucidation of truths already known.

Did our space permit, we should be glad to present the whole of Professor Tyndall's admirable speech. As it is, we cannot refrain from quoting the following lines, addressed to those who apply themselves to science as a vocation. After alluding to his mode of life and study in Germany, he says:

'For a good portion of the time I rose an hour and a half earlier, working by lamplight at the differential calculus when the world was slumbering round me. And I risked this breach in my pursuits and this expenditure of time and money, not because I had any definite prospect of material profit in view, but because I thought the cultivation of the intellect important—because, moreover, I loved my work, and entertained the sure and certain hope that, armed with knowledge, one can successfully fight one's way through the world. It is with the view of giving others the chance that I then enjoyed that I propose to devote the surplus of the money which you have so generously poured in upon me, to the education of young philosophers in Germany. I ought not, for their sake, to omit one additional motive by which I was upheld at the time here referred to—that was a sense of duty. Every young man of high aims must, I think, have a spice of this principle within him. There are sure to be hours in his life when his outlook will be dark, his work difficult, and his intellectual future uncertain. Over such periods, when the stimulus of success is absent, he must be carried by his sense of duty. It may not be so quick an incentive as glory, but it is a nobler one, and gives a tone to character which glory cannot impart. That unflinching devotion to work, without which no real eminence in science is now attainable, implies the writing at certain certain times of the stern resolve upon the student's character: 'I work not because I like to work, but because I ought to work.' In science, however, love and duty are sure to be rendered identical in the end."

We feel assured that the regrets expressed by our parting guest at the circumstances which necessitate his early farewell will be shared by all. That he has succeeded in arousing a new interest in science among us is unmistakable; and that by his personal presence he has, if such be possible, increased the respect and admiration we had formed for him through his writings, is equally true. He carries away with him the expression of our cordial goodwill, coupled with the sincere hope that his return to our shores will be delayed to no distant day.

AN ELECTRICAL TOWER.

Mr. William H. Ward, of Auburn, N. Y., has suggested an electrical tower for accumulating natural electricity for telegraphic purposes. The structure which is to be placed on high mountain peaks or other elevated stations is to be made in three sections. The lower portion is a mere shell containing a door. Above this and insulated from it by a diaphragm is the middle part in which are openings or windows having slats pivoted in them, so that, by means of raising or lowering rods suitably connected to such shutters, the openings may be shut or opened. A projecting roof extends over the windows, serving to protect them from the weather and also for receiving the aerial electricity which may be drawn from it by wires for land line purposes. Above this roof is another insulating dia hragm. The highest portion of the tower is surmounted by a bent ventilating tube and vane, so arranged and connected with the rods acting upon the shutters that the revolution of the vane by the wind will open the windward and close the leeward slats. The wind therefores assists in driving an aerial current of electricity into the insulated middle portion of the tower, which current passes upwardly through the upper portion of the tower and out through the ventilator, thus forming a draft by means of which the electrical current is forced out at the vane. Insulated wires leading from the top portion of the tower allow a supply of electricity to be drawn therefrom.

By the use of the aerial electricity which surrounds the earth in the upper strata of the atmosphere, the inventor considers that artificial batteries may be entirely dispensed with, and a circuit formed merely by connecting the aerial current with the earth current. For instance, to bring Buenos Ayres, in South America, in direct connection with New York the following plan would be pursued: one electrical tower is erected on Pike's Peak or any other suitable high mountain in North America, and another similar tower on some suitable peak of the Andes in South America. The former would, by means of land lines, be connected directly with Denver, which place is again connected with all the prominent cities of the States. In a similar manner the southern tower is connected by land lines with prominent cities *via* Quito. New York telegraphs to the tower on Pike's Peak, and, the operator having connected the land line with the aerial current, the signals are transmitted through the aerial current to the town in South America, and thence—the land lines being suitably connected—to Quito and Buenos Ayres.

A Velocipede Race.

A fifty mile race on bicycle velocipedes recently took place at Wolverhampton, Eng., between two experienced riders, Moore and Johnson. Moore, the smaller man of the two, agreed to allow his opponent an advantage of two miles in the fifty. The first fourteen miles were run in 59 minutes and 23 seconds, the advantage being in favor of Moore. At the end of the twentieth mile the race seemed to be over, as Johnson was evidently suffering from having repeatedly to force his high wheel with short crank up hill against the wind. Moore, on the other hand, with small wheel and long crank, had no difficulty in making the ascent. On the twenty-seventh mile, Moore passed Johnson for the sixth time, who could now scarcely move his vehicle up the short hill, and, on the twenty-eighth mile, Johnson gave up the race. Moore finished the remainder alone, making the fifty miles in three hours 56 minutes and 40 seconds, and running the last mile quite as quickly as the first. At starting, in view of the odds given to Johnson, bets of three to one were offered that he would come off victor.

THE Leyden jar was discovered by Von Kleist in 1745. Chemical decomposition by voltaic electricity, was discovered by Nicholson and Carlisle, London, in 1800.

THE hight of thunder clouds from the earth has been observed, in India, to be from three to five miles.