### THE HELODERMA HORRIDUM.

The discussion of the curious lizard found in our Western Territories and in Mexico, and variously known as the "Montana alligator," "the Gila monster," and "the Mexican heloderma," is becoming decidedly interesting.

As noted in a recent issue of the SCIENTIFIC AMERICAN, a live specimen was sent last summer to Sir John Lubbock, and by him presented to the London Zoological Gardens. At first it was handled as any other lizard would be, without special fear of its bite, although its mouth is well armed with teeth. Subsequent investigation has convinced its keepers that the creature is not a fit subject for careless handling; that its native reputation is justified by fact; and that it is an exception to all known lizards, in that its teeth are poison fangs comparable with those of venomous serpents.

Speaking of the Mexican reputation of the lizard, in a recent issue of *Knowledge*, Dr. Andrew Wilson, whose opinion will be respected by all naturalists, says that "without direct evidence of such a statement no man of science, basing his knowledge of lizard nature on the exact knowledge to hand, would have hesitated in rejecting the story as, at least, improbable. Yet it is clear that the stories of the New World may have had an actual basis of fact; for the *Heloderma horridum* has been, beyond doubt, proved to be poisonous in as high a degree as a cobra or a rattlesnake.

"At first the lizard was freely handled by those in charge at Regent's Park, and being a lizard, was regarded as harmless. It was certainly dull and inactive, a result probably due to its long voyage and to the want of food. Thanks, however, to the examination of Dr. Günther, of the British Museum, and to actual experiment, we now know that *Heloderma* will require in future to be classed among the deadly enemies of other animals. Examining its mouth, Dr. Günther found that its teeth formed a literal series of poison fangs. Each tooth, apparently, possesses a poison gland; and lizards, it may be added, are plentifully supplied with these organs as a rule. Experimenting upon the virulence of the poison, *Heloderma* was made to bite a frog and a guinea pig. The frog died in one minute, and the guinea pig in three. The virus required to produce these effects must be of singularly acute and powerful nature. It is to be hoped that no case of human misadventure at the teeth of *Heloderma* may happen. There can be no question, judging from the analogy of serpent-bite, that the poison of the lizard would affect man."

In an article in the London *Field*, Mr. W. B. Tegetmeier states that this remarkable lizard was first described in the *Isis*, in 1829, by the German naturalist, Wiegmann, who gave it the name it bears, and noted the ophidian character of its teeth.

In the *Comptes Rendus*, of 1875, M. F. Sumichrast gave a much more detailed account of the habits and mode of life of this animal, and forwarded specimens in alcohol to Paris, where they were dissected and carefully described. The results of these investigations have been published in the third part of the "Mission Scientifique au Mexique," which, being devoted to reptiles, has been edited by Messrs. Aug. Dumeril and Bocourt.

The heloderm, according to M. F. Sumichrast, inhabits the hot zone of Mexico—that intervening between the high mountains and the Pacific in the districts bordering the Gulf of Tehuantepec. It is found only where the climate is dry and hot; and on the moister eastern slopes of the mountain chain that receive the damp winds from the Gulf of Mexico it is entirely unknown. Of its habits but little is known, as it appears to be, like many lizards, nocturnal, or seminocturnal, in its movements, and moreover, it is viewed with extreme dread by the natives, who regard it as equally poisonous with the most venomous serpents. It is obviously, however, a terrestrial animal, as it has not a swimming tail flattened from side to side, nor the climbing feet that so characteristically mark arboreal lizards. Sumichrast further states that the animal has a strong nauseous smell, and that when irritated it secretes a large quantity of gluey saliva. In order to test its supposed poisonous property, he caused a young one to bite a pullet under the wing. In a few minutes the adjacent parts became violet in color, convulsions ensued, from which the bird partially recovered, but it died at the expiration of twelve hours. A large cat was also caused to be bitten in the foot by the same heloderm; it was not killed, but the limb became swollen, and the cat continued mewing for several hours, as if in extreme pain. The dead specimens sent to Europe have been carefully examined as to the character of the teeth. Sections of these have been made, which demonstrate the existence of a canal in each, totally distinct from and anterior to the pulp cavity; but the soft parts had not been examined with sufficient care to determine the existence or non-existence of any poison gland in immediate connection with these perforated teeth, until Dr. Günther's observations were made, as described by Dr. Wilson.

Hitherto, as noted in a previous article, American naturalists have regarded the heloderm as quite harmless—an opinion well sustained by the judgment of many persons in Arizona and other parts of the West by whom the reptile has been kept as an interesting though ugly pet While the Indians and native Mexicans believe the creature to be venomous, we have never heard of an instance in which the bite of it has proved fatal.

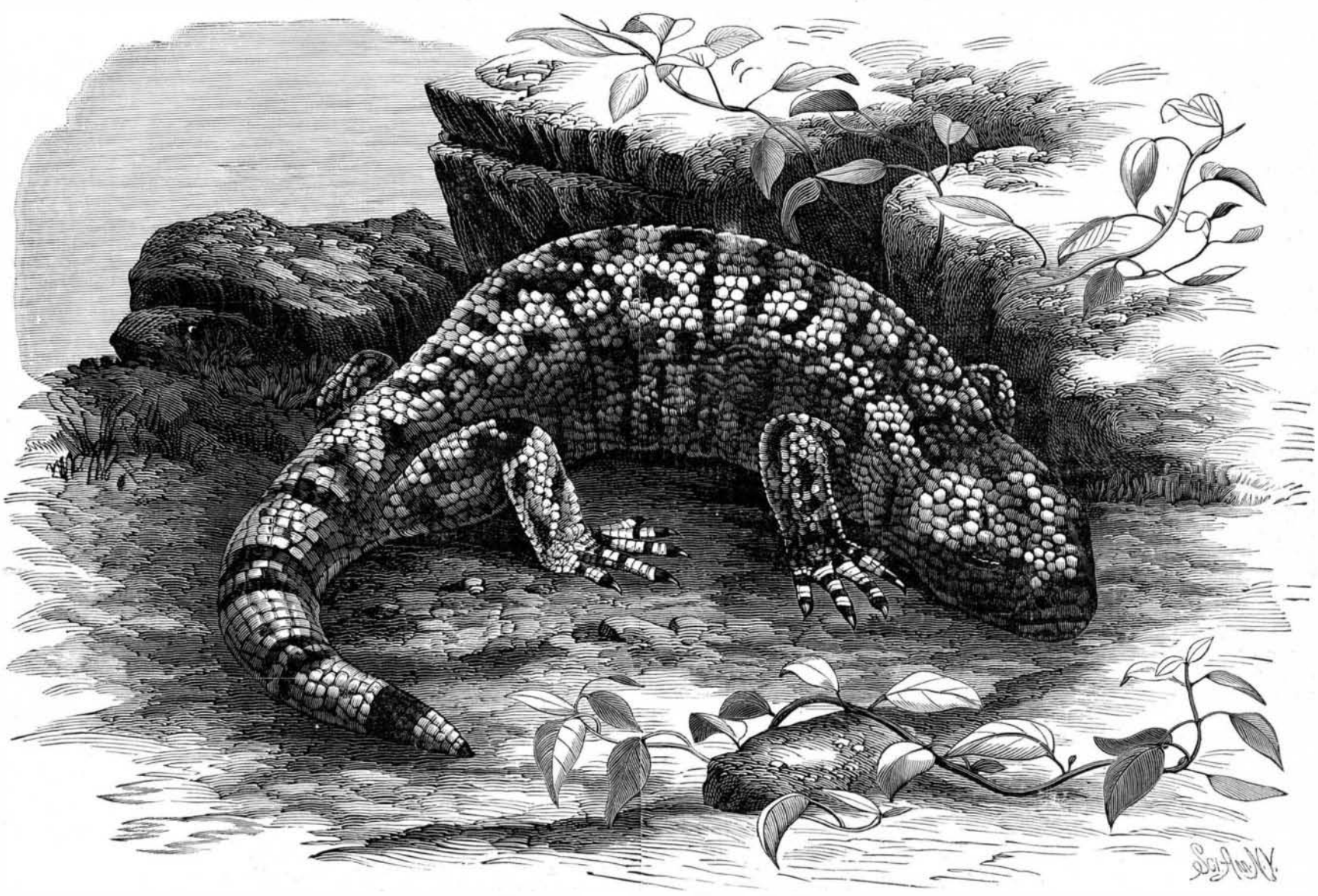
A correspondent, "C. E. J.," writing from Salt Lake City, Utah, under date of September 8, says, after referring to the article on the heloderm in our issue of August 26:

"Having resided in the southern part of this Territory for seventeen years, where the mercury often reaches 110° or more in the shade, and handled a number of these 'monsters,' I can say that I never yet knew anybody or anything to have perished from their bite. We have often had two or three of them tied in the door-yard by a hind leg, and the children have freely played around them—picking them up by the nape of the neck and watching them snap off a small bit from the end of a stick when poked at them. We have fed them raw egg and milk; the latter they take with great relish. At one time a small canine came too near the mouth of our alligator (*mountain alligator*, we call them), when it instantly caught the pup by the under jaw and held on as only it could (they have a powerful jaw), nor would it release its hold until choked near to death, which was done by taking it behind the bony framework of the head, between the thumb and finger, and pressing hard. The pup did considerable howling for half an hour, by which time the jaw was much swollen, remaining so for two or three days, after which it was all right again. By this I could only conclude that the animal was but slightly poisonous. I never knew of a human being having been bitten by one. My sister kept one about the house for several weeks, and fed it from her hands and with a spoon. The specimens have generally been sent (through the Deseret Museum) to colleges and museums in the East.

"The Indians have a great fear that these animals produce at will good or bad weather, and will not molest them. Many times they have come to see them, and told us that we should let them go or they would talk to the storm spirit and send wind and water and fire upon us. An old Indian I once talked with told me of another who was bitten on the hand, and said it swelled up the arm badly, but he recovered. From some reason we never find specimens less than 12 or 14 inches long. *I* never saw a young one. There is a nice stuffed specimen, 18 inches long, in our museum here."

Sir John Lubbock's specimen, shown in the engraving herewith, for which we are indebted to the London *Field*, is about 19 inches in length. Its general color is a creamy buff, with dark brown markings. The forepart of the head and muzzle is entirely dark, the upper eyelid being indicated by a light stripe. The entire body is covered with circular warts. It is fed upon eggs, which it eats greedily.

It would be interesting to know whether the northern specimens, if venomous at all, are as fully equipped with poison bags and fangs as Dr. Günther finds the Mexican specimen to be. Some of our Western or Mexican readers may be able to make comparative tests. Meantime it would be prudent to limit the use of the "monster" as a children's pet.



THE HELODERMA HORRIDUM.

### The Largest American Cable.

The cable which the Baltimore and Ohio Telegraph Company laid September 20, across the Narrows at the entrance of New York Harbor is believed to be the largest cable made in this country. It contains seven conductors of No. 14 copper wire, insulated with kerite, and wound with galvanized iron wire. Its length is 6,500 feet, diameter 2¼ inches, and weight 3,600 pounds. It was made by the Kerite Company, at Seymour, Connecticut. Telegraphic connection with the West and South has hitherto been through cables across the Hudson. The new connection is by wires across the East River Bridge, thence to Fort Hamilton, crossing the Narrows to Staten Island by the cable. A cable across the Kill von Kull will connect Staten Island with the main land.

### A New Port for London.

This new means of communication has been obtained by the Southeastern Railway Company, acquiring the line of the Hundred of Hoo Railway Company, who obtained their act two years ago. The new line leaves the North Kent system about three miles below Gravesend, and reaches the banks of the Medway at Port Victoria, as the new port has been called, a point nearly opposite to Queenborough in the deep-water channel of the river. The advantages claimed for the new line and the docks which it is intended shall form part of the completed scheme, are that it shall at once give facilities for loading and unloading the largest sea-going vessels, in any state of the tide, at a point within fifty minutes by rail of London, and without any of the delays which necessarily result from navigating the tortuous and crowded waterway of the Thames between Gravesend and the docks; with the additional prospect when the new pier is built of having the means of accommodating, for loading and unloading purposes, vessels in twenty-seven feet of water at low water in ordinary spring tides. The pier, which has already been completed, is four hundred and fifty feet in length by fifty feet wide, and has, close in, a depth of twenty-two feet at low water. The main pier, which will be commenced immediately, will be built in the stream about one hundred yards distant from the present structure, and will have a length of six hundred feet and a width of sixty feet. The trains will run directly on to the pier over lines laid on cylinders and latticed girders, and will discharge passengers and cargo directly into the vessels moored alongside. By this means much of the inconvenience to passengers and delay in the transit of merchandise, now existing not only in the port of London but elsewhere, will be avoided, and it is expected that the commercial advantages afforded by ocean steamers of the largest tonnage combined with rapid railway communication between London and all parts of the world will be attained. The company have secured some five hundred acres of ground in the neighborhood of the port, on which it is intended to construct docks capable of accommodating the largest ships afloat, and which will be further utilized in such other ways as may be necessary for the success of the undertaking. One great advantage of the scheme will be that, the railway now having communication with Woolwich Arsenal, a heavy train of military stores can be discharged on shipboard within a few hours of quitting Her Majesty's storehouses. The line and the existing pier have been constructed by Mr. Francis Brady, engineer of the South Eastern Company, under whose superintendence the entire works will be completed.

### Alone.

The London *Lancet* relates a distressing case of suicide of a boy ten years old, who had been shut up in his bedroom as a punishment. The editor comments adversely on leaving children or young persons and the weakly or troubled in mind alone:

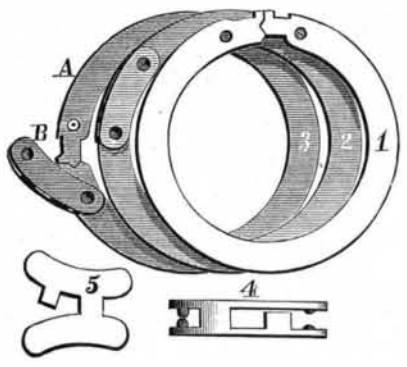
"The solitary state is abhorrent to the nature and mind of man. Whether the brain be immature in its development or morbid in its state, it is wrong in a scientific sense—that is, opposed to the laws and teachings of physiological science—to leave it alone. The possibility—we will even concede the probability—of a subsidence of excitement is not a sufficient set-off against the dangers of a self-destructive intellectual activity. The mind always works to its own injury when it works alone. Reflection, introspection, and self-examination are essentially abnormal processes. The proper action of mind is on the outer world, or on such conceptions of fact and object as may be readily corrected by present observation or experience. Abstract processes of thought are never safe for the young or the weakly and troubled in mind. Healthy activity, so far as these two conditions of mind are concerned, is directly relative. It is not good for man to be alone in any sense. We would therefore again protest against the recourse to solitary confinement as a punishment for children, and against 'seclusion' in any form for the unsound of mind. The two methods of treatment stand on the same footing, and they are both equally bad."

### Hailstorms and Forests.

The Geneva correspondent of the London *Times* writes, under date September 1: "Hailstorms, as is well known, often play sad havoc in Switzerland as well as in other parts of Europe. They generally last only a few minutes, but in that time the crops of a whole district may be destroyed, trees stripped of their fruit and leaves, and even potatoes in the ground hacked to pieces. Birds are sometimes killed by the hundred, and a grape-vine touched by a hailstone is ruined for ever. Seven years ago there was a hailstorm in this canton, which in less than five minutes did damage estimated at a million of francs. In some districts there are mutual hail insurance societies, as in other countries there are mutual fire insurance societies. In these circumstances everything relating to the phenomena and causes of these visitations is studied with great interest, and papers on the subject read at the late meeting of the association of Swiss Geographical Societies, held this week at Geneva, by Herren Beaumont and Riniker, of Aargau, are attracting considerable attention in scientific circles. The utility of forests as a safeguard against avalanches and a hinderance to *tourments* and snow-drifts has often been pointed out, but it has never before been suggested that forests are a preservation against hailstorms. Such, however, is the opinion of Herr Riniker, who is chief forester of Canton Aargau. He says that where there are forests there are no hailstorms, and in support of this theory he adduces a remarkable fact, for the accuracy of which he and many others can personally vouch. In the south of Aargau there is a little chain of mountains known as the Lindenberge. The Lindenberge are about twenty kilometers long, of an average height, above sea level, of some eight hundred feet, and completely covered with wood. About twenty years ago, the forest was divided in two places by wide gaps, with the consequence that the valleys at the foot of the mountains were soon afterward visited with frequent hailstorms. The hail-charged clouds were seen to traverse the gaps. In 1868 the wider of the open spaces were closed by a plantation of firs, and since 1871 no hailstorm has crossed the forest. In explanation of this phenomenon Herr Riniker suggests that, as hailclouds are saturated with positive electricity, and trees conduct from the earth negative electricity, the meeting of the two currents develops sufficient heat to prevent the complete congelation of the clouds and even to thaw the hailstones contained in them—for the clouds of this description pass very near the earth—and so convert the frozen particles into rain. If further observation should confirm the accuracy of Herr Riniker's conclusions in this regard, the importance of forests in countries where hailstorms are frequent will be greatly increased."

### NEW KEY RING.

A novel and convenient key ring has recently been patented by Mr. Bryant H. Melendy, of Battle Creek, Mich. The ring, A, is made of steel or other suitable spring metal, the body being flat, and stamped out in the shape shown in Fig. 1 in the accompanying engraving, the ring being separated at the top, and having holes near each of its ends. The form of the ends permits the ring to be opened sidewise, but prevents its opening edgewise. The clasp, B, of the ring is stamped out in the shape shown at Fig. 5, and when its sides are bent over the clasp is as shown in Fig. 4, the projections at the ends of the clasp fitting into the holes in the ends of the ring, the sides of the clasp springing sufficiently to allow the projections to pass into the holes. At Fig. 2 the ring is shown with clasp closed, and at Fig. 3 with the clasp opened.




MELENDY'S KEY RING.

### White Water off the Maine Coast.

A curious belt of whitish water is reported off the coast of Maine. The white streak is about 30 miles in width, and extends from Monhegan in a northeasterly direction, 65 to 70 miles. The line of demarkation between the blue water and the white streak is plainly marked and as regular as a wall. The white water is semi-transparent, and mackerel seen beneath the surface have a reddish appearance. Fishermen say that mackerel passing from blue to white water are peculiarly affected by the change, becoming wild and rushing madly to and fro. They do not come to the surface, but their movements can be plainly seen under water. No explanation is given of the phenomena. Captain Stephen J. Martin, a veteran fisherman and an employe of the United States Fish Commission, says the same condition of things existed at about the same place in 1849, and that a similar phenomenon occurred on the southeastern part of Georges Bank in 1851, when from aloft sword fish could be seen sporting beneath the surface a quarter of a mile distant from the vessel.

### The Ear Drum Ruptured by Diving.

Dr. H. A. Wilson, aural surgeon to St. Mary's Hospital, Philadelphia, reports two cases of rupture of the drum of the ear caused by diving. In both cases the hearing was seriously impaired, but the wound healed in the course of ten or fifteen days. Dr. Wilson says:

The mechanism of the rupture is not difficult of explanation. The water, forcibly impinging upon the column of air in the external auditory meatus, suddenly increased its pressure upon the membrane, while the normal pressure upon the inside remained unchanged. The eustachian tube permitted the air to escape from the middle ear, and thus it will be seen that there was no resistance given to the internal column of air. The internal force of resistance being suddenly exceeded by the external impinging force, the rupture ensued. To prevent rupture when diving, it is necessary that the pressure upon the membrana from without should be compensated for by an equal resisting pressure from within. To accomplish this, a full inspiration should be taken prior to diving; the mouth kept shut; and, to prevent the escape of air by the nose, the posterior nares should be closed by elevating the soft palate. This is done almost involuntarily, and retains the inhaled air in the lungs, buccal and aural cavities, its compression being produced by the contractions of the chest and cheek muscles. The act of swallowing will force sufficient air through the eustachian tube into the middle ear to resist the pressure from without.

Holding the nose is not essential to the closure above referred to, but is a crude method of accomplishing the same result, and is resorted to by those who either have not sufficient control over the palatine muscles, or who do so through fear of swallowing the water.

Bathers should be careful to guard against accidents of this nature, which Dr. Wilson believes to be more common than is suspected.

After a rupture of the drum-head, if the parts do not unite, there will be left a permanent opening, and the inconvenience caused by air whistling through it is not the only thing to be dreaded. The delicate structure of the middle ear being directly exposed to the action and changes of the atmosphere, serious inflammatory changes are apt to take place, and purulent discharges and permanent impairment of hearing result.

The eye being exquisitely sensitive to the slightest touch takes cognizance of the presence of the most minute irritant, and prompts the patient to seek immediate relief. The absence of this sensibility in the ear is very frequently the cause of neglect to attend to it when injuries of this organ take place.

### American Institute Fair.

The prevalence of heavy rain during the week preceding the opening of the American Institute Fair, September 27, prevented the installation of many of the promised exhibits; yet, in spite of the general state of unreadiness throughout the hall, there were abundant indications that the exhibition would prove one of the best. The exhibition will be open daily for ten weeks, from 8 A.M. to 10 P.M.

There will be a floral and horticultural exhibition from the 11th to the 14th of October, and on November 8 an exhibition of chrysanthemums.

### Pneumonia an Infectious Disease.

That acute, lobar, croupous pneumonia is considered by some an infectious fever, with evident tendency to the lungs, or as now better expressed, a zymotic disease, caused by the inhalation of bacilli, which accumulate mostly in a lower lobe of one lung, we have often had occasion to note. The proofs of this statement accumulate daily.

Dr. Köhnhorn found that the disease had become endemic in one of the barracks at Wisel. Occasionally it broke out as a local epidemic. The regiment stationed there had suffered frequently from the disease. Not a year passed without many falling a victim to pneumonia. The regiment was then placed in other quarters, and no further case happened in this regiment. The barracks were torn down, the soil disinfected most thoroughly, as also all the building material. Since the regiment has been camping in these rebuilt barracks not a solitary case of pneumonia has made its appearance.—*Medical and Surgical Reporter.*

### Ashbel Welch.

Ashbel Welch, President of the American Society of Engineers, died at his home at Lambertville, N. J., September 25, in his 71st year. Mr. Welch was born in Madison County, New York. His first employment as civil engineer, at the age of eighteen, was on the Lehigh Canal. He soon became prominent as a railway and canal constructor. For many years he was identified with the New Jersey Railroad system, and for fifteen years was president of the United New Jersey Railroad and Canal Company. From 1840 to 1845, he was engaged with Captain R. F. Stockton in the experiments which resulted in the building of the war steamer Princeton, the first screw steamer built in this country, and the pioneer naval vessel of the class.

At the time of his death, Mr. Welch was consulting engineer of the New York, West Shore, and Buffalo Railroad, now under construction.

### Snow in Melbourne.

The first recorded snowfall in Melbourne occurred July 26. There are traditions of snow during the first decade of Victorian history, but the meteorological records of the colony do not confirm them. The late snowfall extended over the whole southeastern portion of the colony, and on the higher lands was quite heavy. At Kiandra, near the source of the Snowy River, the ground was covered with twenty inches of snow.

### A Long Ditch.

The Colorado Coal and Iron Company are preparing to open an irrigating ditch from a point on the Arkansas River, 3½ miles below Cañon City, across the tableland in a southeasterly direction to the St. Charles River, a distance of 76 miles. The ditch is to be 30 feet wide, carrying 5 feet of water.

A Great Northern Railroad train, with an 8-foot single driver outside cylinder engine, lately ran from Leeds to London, 186¼ miles, in exactly 3 hours—62 miles an hour.