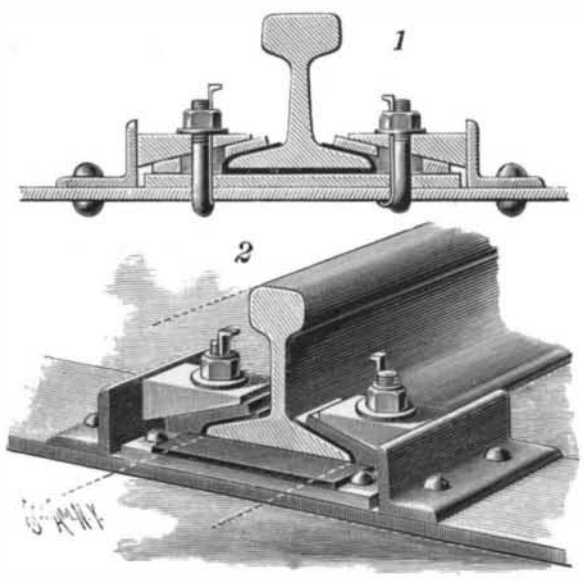
AN IMPROVED RAIL FASTENING.

A fastening with which the rail may be readily adjusted laterally and longitudinally, the bolts being placed in position from above, is represented in the accompanying illustration. It has been patented by Francis W. Wilson, and the improvement is being introduced by the New York Rail Insulation and Equipment Company, of No. 200 Market Street, Newark, N. J., manufacturers of materials for track rail insulation which have been introduced on some large bridges and viaducts, and applicable on all structures where automatic electrical signal devices are in use. Fig. 1 shows a cross section of the improved fastening, Fig. 2 being a view in perspective. On the rail plate, which rests on a metallic or other support, is a sound-deadening or insulating material on which rests the base of the rail, each flange of which is engaged by a clip having an in-



WILSON'S RAIL FASTENING.

clined surface, the sound-deadening or insulating material extending between the flange and the clip. The clip has an elongated aperture for the passage of a bolt, which also passes through an opening in an upper wedge-shaped clip whose base rests on an angle iron secured to the metallic support. The bolt has at its lower end a flange or projection, directly over which one side of the bolt is flattened, forming a pathway for a key, preferably of soft iron or steel, so that when the key is driven down at the side of the bolt the lower end of the key will be curved outward by the flange to form a retaining lip engaging the under side of the support. When the lip is thus formed, as indicated on the right of the rail in Fig. 1, the bolt is drawn up by screwing up the nut resting on a washer on the upper clip, whereby the rail clip is firmly secured in place. It is obvious that, by loosening the nut, the rail may be shifted longitudinally or laterally as desired.

IN MEXICAN CATACOMBS.

For a man who is not finical as to what becomes of his body after death, and who wants to economize in point of funeral expenses, Mexico is about as good a country in which to shuffle off this mortal coil as any. In fact, it might be considered as quite the place for a gentleman in moderate circumstances to die, for there it is possible to get a third-class interment including all the advantages of a first-rate burial, without the possibility of your friends being a bit the wiser for at least five years. This is due to a system in vogue there of disposing of the dead, and while to the frugal man it offers some inducements, like all economy it is fraught with its inconveniences. One of these is that a cheap interment means only a lease on a grave, with the corpse subject to removal at its expiration, and were most of us to die in Mexico we would rather pay a little extra and revel in the luxury of perpetual burial.

In some parts of Mexico the cemetery or panteon is inclosed with a great wall, which is nothing more or less than a huge vault, persons being buried in its sides. This wall is partitioned or compartmented off for that purpose. The graves or cells are about two feet wide, two feet high and six feet long, and are leased or sold outright to any who may have use for them. For $25 you can rent a niche in the wall for five years, after which you must vacate for another tenant. Your bones are then thrown into a charnel house, in a heap with a lot of other old bones, unless you should have become mummified in the meanwhile, in which case you are labeled and stood up against the wall, more out of respect for your staying qualities than any deference to your person. There your friends and relatives can come and visit you. If they had any inclination to steal you, they could easily do it, as you will be found to weigh not over five pounds. However, for an extra $25 you can get another five years' lease on your grave, and for $100 down you can get a guarantee that your bones will never be touched.

The picture shown is the charnel house of the Panteon Municipal of the city of Guanajuato, Mexico. It is an excellent one and will give a fair idea of the grewsome catacombs which are quite common throughout that country. In the foreground are the mummies, or, to be really correct, "stiffs," as they are taken from the wall after their allotted time of burial. On their breasts can be distinctly seen the labels, telling who they are and from what niche they were removed. They are all known and called by their names when pointed out to visitors by those in charge. As can be seen in the illustration, that thoughtful-looking chap on the right was once a brilliant lawyer and a well known figure on the streets of Guanajuato.

A true story is told of a woman who, after her husband's death, married again. One day she was paying a visit to this charnel house when she recognized the mummy of her first love leaning up against the wall. She went into hysterics at the ghastly sight, and as a result of this visit No. 1 was given a continuous place in the wall.

There has been no reliable solution as yet for the cause of so many of these bodies mummifying, and as it seems to be a sort of kiln burning process that they go through, the question might present itself to the speculation of clay workers. In Mexico the sun is very hot, and it beats the livelong day on the wall of the panteon.

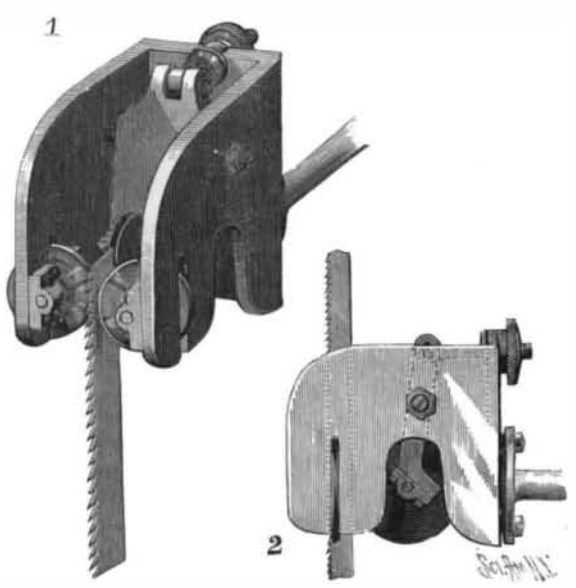
As the compartments containing the bodies are all hermetically sealed, this intense heat is supposed to be one of the causes in bringing about this mummified condition. Whether that is the case or not, they have certainly had a good burning when they are taken out, and it is yet to be decided whether the human clay is subject to vitrification in the right kind of a kiln.

The foregoing facts were furnished to our contemporary Brick, to which we are indebted for the loan of the cut and particulars, by the Rev. J. C. Cartwright, of the Methodist Episcopal Mission, Guanajuato, Mexico, who spent five years in that country and recently returned to Chicago for his health. Mr. Cartwright has made a deep study of Mexican life and habits.

THE apparent diameter of the moon is greater in the Elorn valley (Finisterre, France), says Prometheus, than anywhere else. This is attributed to the high humidity of the air prevailing there.

A FRICTIONLESS BAND SAW GUIDE.

The illustration represents a band saw guide designed to be practically frictionless, and with which there can be no perceptible vibration of the saw, thus insuring a clear cut through the wood. The improvement has been patented by John A. Martin, of Morganfield, Ky. Fig. 1 shows the device in perspective, Fig. 2 being a side view. The rear end piece of the frame is attached to a shallow cone block by two set screws, and a guide wheel carrying frame has pivotal bearings on screws passed through tapped openings in the side pieces. The upper end of the guide wheel carrying frame is adjustable by a screw rotating in the back piece, and on the lower inclined end of this frame are boxings for the shaft of a grooved bearing wheel which engages the rear edge of the saw. Forward of this wheel are lateral guide or pressure disks adapted to



MARTIN'S BAND SAW GUIDE.

bear against the sides of the saw blade, and, by means of the screws in the shallow cone block, these disks may be given a small amount of lead or adjustment toward or from the base of the saw teeth, to prevent the saw from being pulled out of its pulleys when backing out of the work.

Celluloid as a Material for Splints.

In the Centralblatt fur Chirurgie, says the New York Medical Journal, Prof. Landerer and Dr. E. Kirsch mention the great drawbacks of plaster of Paris as a splint material—its weight and its proneness to become foul by absorbing sweat, urine, etc. They say that in the Medico-mechanical Institute of Stuttgart celluloid has been found an excellent substitute free from these disadvantages. A wide mouthed bottle is packed for about a quarter of its height with celluloid cut into small pieces and then filled with acetone. It is provided with an airtight stopper to guard against evaporation. From time to time it is opened and the contents are stirred with a stick. The celluloid dissolves in course of time. A plaster cast of the diseased or injured part is covered with a moderately thick layer of felt or flannel, and the celluloid solution is rubbed into this covering with the hands, which are to be protected with leather gloves. This process should be repeated from four to six times. The advantages of the celluloid splints and corsets are their lightness, hardness, stability, elasticity, and cleanliness.

A MUSTARD plaster made according to the following directions will not blister the most sensitive skin: Two teaspoonfuls of mustard, two of flour, two of ground ginger. Do not mix too dry. Place between two pieces of old muslin and apply. If it burns too much at first, lay an extra piece of muslin between it and the skin; as the skin becomes accustomed to the heat, take the extra piece of muslin away.

CURIOUS CATACOMBS IN MEXICO.

Carrara's Marble Quarries.

The British vice consul at Spezia, in a report on the Carrara marble industry, says that last year the production of the quarries was 108,951 tons of ordinary and statuary marble and 52,360 tons of sawn and worked marble.

The different kinds of marble in the market from the Massa-Carrara quarries are statuary or Carrara, properly so called; Sicilian, veined, dove, and peacock. There are a few colored quarries, but their product is insignificant. Massa produces some colored marble. There is a quality of marble, perhaps the most rare, and for some purposes the most beautiful, known as "pavonazzo," or peacock. It has a creamy ground with blood violet or purple markings or veins. Of the Sicilian (biancochiaro), blocks of almost any size can be obtained. It is only a question of transport. Blocks weighing as much as forty tons have been seen at Carrara. A quarry of red marble has lately been worked near Garfagnana.

The main valleys in which the quarries lie are the Ravaccione and Fantiscritti. To reach the Ravaccione a long valley of quarries has to be passed, at one end of which, named Crestola, the finest statuary marble is excavated, while at the other end the commonest "Sicilian" is found. Two explanations are given for naming the ordinary biancochiaro marble "Sicilian." One is that during the French occupation of Italy it was sent to Sicily and thence to England. The other that the vessels loading marble afterward went to Sicily to complete their cargoes with fruit, etc.

The number of quarries is estimated at 645, of which 387 are worked. Of these, about 329 give Sicilian, 27 statuary, 22 veined, 7 dove, and 2 peacock marble. The quarries give work to 4,500 quarrymen, whose wages range from 8f. to 2f. a day. Another 1,000 men work in the towns at the sawmills, studios, etc., as sawyers, carvers, rubbers, and polishers.

The conditions of labor in the marble district have undergone little change. Wages are much the same as they were twenty years ago, but the purchasing power has decreased, owing to the heavy taxation and enhanced cost of living. Remedial measures to remove or mitigate the grievances that gave rise to the riots in 1894 were proposed before they were quelled, but there has not been time to carry them all into effect. One of them, a fund to provide against accidents and their consequences, has been raised by the addition of a small percentage to the tax levied on the output, known as "pedaggio." The sum thus raised during 1895 was £1,950, and five houses were built at the quarries to render first aid.

Accidents and injuries are of daily occurrence. The serious ones are between 70 and 80 yearly, and those terminating fatally are about 8 per annum. The quarryman's life is not a pleasant one. He leaves his home often in the small hours of the night, so as to be at his work soon after daylight. A huge slice of bread crammed into his pocket is breakfast and dinner; his supper will be a dish of coarse "minestra," and perhaps a glass of sour wine; meat he never tastes, unless a little on Sunday; nevertheless, says the vice consul, he is a good fellow, rather rough spoken and indifferent to his religious observances, but thoroughly honest.

Little machinery is used except at the sawmills, and this is made in Italy. A good supply of iron for the saw blades comes from Germany, and is rolled out at Udine, in Italy. It is of better quality and cheaper than English. A few tools also come from Germany, but besides these saw blades and tools, other articles, such as machine belts, steel and hardware goods, which at one time were obtained exclusively in England, are now either manufactured in Italy or obtained in Germany. However, there is one article which is always imported from France, viz., "lifting jacks," as those made in Germany or England are not adapted to the requirements of the Carrara quarries.

A NEW source of vanadium compounds has been found on the South American Andes. On one of the high plateaus a mine of anthracite has been located, which, when burned, leaves an ash containing vanadium and silver. The vanadium is now being extracted for use in making aniline black and coloring porcelain.

THE NEW HIPPOPOTAMUS OF THE GARDEN OF PLANTS, OF PARIS.

The most important of the acquisitions recently made by the Garden of Plants, of Paris, is that of a young male hippopotamus, a native of Senegal, which has just taken its place alongside of a female specimen that was presented to the menagerie in 1855 by Halim Pasha, brother of the Viceroy of Egypt. This female, during the course of her forty-one years of captivity, to which she was reduced at the tender age of one year and a half, mated with a male that entered the menagerie at the same date, and that she had the misfortune to lose in 1881, after a long union that was sometimes disturbed by his bad temper. She, on the contrary, has always shown herself very gentle. As good a

OPEN JAW OF HIPPOPOTAMUS.

mother as she was a patient spouse, she exhibited a touching tenderness toward the four young ones that she brought successively into the world. Unfortunately she had not the satisfaction of rearing these; but her family affliction does not seem to have led to a loss of appetite. At present, aside from the rolls thrown to her by visitors, the following is her daily bill of fare: Principal meal, one bundle of lucerne, one of hay, and a few pecks of beets, carrots and potatoes; supper, forty gallons of a mash of fine grits.

We noted these details this very week at the museum, whither we went to "interview" young Keko (for such is the name of the new comer). Not having been able to obtain the favor of being immediately presented to him, we in the first place paid a visit to the venerable widow, whom we have somewhat neglected in recent years. We had the pleasure of ascertaining that she was very well, and that she had not improved in beauty, but had used all her coquetry in preserving the dominant characteristic of her race—ugliness—in which, to use the expression of the naturalist Vogt, the hippopotamus rivals the rhinoceros. A heavy, almost shapeless, mass, measuring 14 to 15 feet in length, and weighing more than 4,500 pounds; an obese belly distended like a leathern bottle upon short bandy legs; a huge head terminating in a thick muzzle and a monstrous mouth; a naked skin of a dirty coppery color; and there you have the beast. Our engravings give a faithful portrait of her, and one of them shows her open jaws armed with formidable teeth. And this is what will become of young Keko in his turn, provided his life is spared. We were finally enabled to see him, and found him charming (in so far as the hippopotamus is concerned), very lively, a little vicious, and full of promise. He is eight months old and already weighs over 400 pounds. He has up to the present been fed upon milk at the rate of fifteen gallons a day. His keeper heats his bath to 73° F. for fear he may take cold, since even now he has those aquatic habits that justify the name of his genus. It is less through the rareness of the species (which is essentially of African origin) that is explained the limited number of hippopotamuses in menageries than through the difficulty of transporting these cumbersome amphibians. Hence the particular solicitude of the museum administration for the subjects that it has the good fortune to own.—L'Illustration.

THE NEW HIPPOPOTAMUS OF THE GARDEN OF PLANTS, OF PARIS.

Excavations at Jerusalem.

At the general meeting of the Palestine Exploration Fund this year, says the London Standard, Lieut.-Col. Watson read the annual report, which stated that the excavations at Jerusalem, for which a firman was granted by the Porte, have been carried on by Dr. Bliss with success. An interesting rockscarp has been traced for some distance along the side of an old wall of the city, south of the present wall, and followed for over 1,000 feet. In this line of wall the remains of several ancient towers and a gateway were discovered, and no less than four sills of this ancient gateway, belonging to four different periods, were found in situ, one above the other. Dr. Bliss wrote, saying that he knew of no more interesting example of a place where four distinct periods might be studied in the short perpendicular space of four feet.

Subsequently, on following the wall toward Siloam, there was found near the bottom of the hill another gateway, also representing four distinct periods. A retaining wall, across the mouth of the Tyropean Valley, was examined. It was still too early to know the full significance of these discoveries.

Dr. Bliss, in a summary of the results of the excavations, stated that near Siloam, outside the city wall, interesting Roman baths were discovered. Their work, he added, had gone very smoothly. A buried wall was no respecter of persons, and ran through the lands of a Greek patriarch, a Moslem pasha, a Latin father or a Siloam fellah, with all of whom the excavators must come to some understanding, financial or otherwise. But he was glad to say that this understanding had always been friendly. Unfortunately, most of their work had been covered up; a barley field had revealed its secrets, and once again was in superficial appearance a mere barley field.

The excavations were not the only work which have been carried on at Jerusalem under the auspices of the fund. The veteran explorer Herr von Schick has pursued investigations of a very interesting character within the city. His examination of mediæval churches and convents in Jerusalem and of the quarter known as Bab Hytta threw a flood of light on the conditions of the Holy City during the period covered by the Crusaders' occupation of it.

The executive committee, in concluding its report, stated that, in order to carry out the objects of the fund effectively, a considerable increase in its income was absolutely and essentially necessary, otherwise the excavations at Jerusalem would have to be suspended. Having so lately obtained the firman from the Sultan for continuing these operations, which had been prosecuted to the present time with such unequaled success, their cessation or delay would be a matter most deeply to be deplored.

Sir Charles Wilson, the chairman, moved the adoption of the report, and said that the most interesting point they wished to solve next was the course of the wall in the Tyropean Valley, and which was the gate through which the last king of Jerusalem fled. He considered that Dr. Bliss had carried out the work in a remarkably successful manner and at a very cheap rate. Future experiments, he was afraid, would be more expensive, but he believed that the results would be worth the money laid out.