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JAMES H. GRIDLEY.

It is with the deepest sorrow we record the decease, on the 25th ult., at Washington, of Mr. James H. Gridley, the active manager of the branch offices of the SCIENTIFIC AMERICAN in that city.

Mr. Gridley was born in Boston, Mass., January 15, 1833. His family removed to Providence, R. I., when he was quite a lad, and there he received his early education. In youth he was more than ordinarily intelligent and quick to learn. Among his early acquirements was stenography, and his knowledge of this art, a rare accomplishment in those days, gave him a position as stenographer and clerk with Fowler & Wells, phrenologists, New York. In 1854 he was in Cincinnati, learning the art of mechanical drawing in the patent offices of Knight Bros.; subsequently he had practical experience in a machine shop. 1858 finds him in Washington as a mechanical draughtsman and stenographic reporter in Congress.

In 1860 Mr. Gridley entered the SCIENTIFIC AMERICAN office in Washington, where his sterling abilities found immediate employment and recognition. His conspicuous talents soon caused his promotion as manager, a position which he continued to hold without interruption until his decease, always enjoying the confidence and esteem of his employers. The business interests of Messrs. Munn & Company in Washington, it is known, are very extensive. Of these, in all their details, Mr. Gridley had the management, yet such were his superior qualities as a business man that in all these years there was never an example of irregularity or confusion. No one could have been more devoted to the interests of those for whom he acted than was Mr. Gridley. He was implicitly relied upon, and discharged every trust with zeal and ability.

The number of employes under his management was quite large. He had the happy faculty of so directing their efforts as to yield the best industrial results, and yet every individual revered Mr. Gridley as a friend and associate.

As the head of a large establishment like ours, the number and variety of important questions relating to Patent Office law and practice, that constantly arose for decision was marvelous; but Mr. Gridley disposed of them with rapidity and almost unerring judgment. He was necessarily brought into frequent intercourse with the various officials of the Patent Office, from the Commissioner down, and it may be said, without affectation, that he invariably commanded the respect and esteem of those with whom he had dealings. Mr. Gridley's position often brought him into communication with the heads of the various government departments, with governors, senators and representatives. He is remembered by all for his kindly disposition and satisfactory business methods. His domestic relations were all that could be desired. He had a lovely home, and here, after the business cares of the day were over, he was accustomed to enjoy the refining influences of music and literature. He was one of nature's noblemen. To us his loss is irreparable.

"Green be the turf above thee,
Friend of our better days;
None knew thee but to love thee,
None named thee but to praise."

PARALLEL BOUNDARIES.

To the Editor of the SCIENTIFIC AMERICAN:
In your issue of December 15 I find an article on page 371 relative to the migratory character of parallels of latitude, in part as follows:

"From the Lake of the Woods to Vancouver's Island, the 49th parallel has been established as the boundary line between the United States and British America, for a distance of more than 1,200 miles. Similarly, the north line of New York, Vermont, and a part of New Hampshire is the 45th parallel for more than 250 miles. The shifting of these two boundary lines, consequently, brings alternately under the jurisdiction of the United States and Canada two strips of land 60 feet wide and 1,200 and 250 miles in length.

"Together they contain 11,000 acres, or land enough for a hundred good sized farms. This land was all on the Canadian side in April and May, 1890, and in May, 1891, all on the United States side in Nov., 1890, and again in Dec., 1891."

Without occupying any of your space commenting upon the usefulness of this discovery, if it is one, I think you need have no apprehensions relative to its effect upon boundary lines that may have been originally referred to some parallel of latitude, as was the line between Pennsylvania and New York fixed by decree upon the 42d parallel.

This line was located on the ground by commissioners in 1787, one of whom was the celebrated David Rittenhouse (a surveyor then without a peer in this country or any other), with all the precision available at that time, and monuments placed at every mile.

After a lapse of nearly a century, many of these monuments were more or less displaced or lost, and portions of the line became somewhat obscured. Commissioners for both States were authorized about the

year 1875 to investigate this subject. The commissioners on the part of Pennsylvania proposed to go back to the original decree and fix the line upon the 42d parallel of latitude, with all the precision of modern science.

The following extract from the report of the New York commissioners will show the position taken by that State:

"Since this boundary was fixed by methods always employed in laying out boundaries described as parallels, and since the work was of the best quality of its day, therefore, according to all precedent and legal ruling, there can be no doubt that the line marked on the ground by our commissioners in 1786-7 is the bounding line between New York and Pennsylvania; and every effort therefore should be made to restore this line."

In such cases the practice is to use landmarks and all available testimony to recover as many points on the line as possible, and then to connect these with straight lines.

This method was adopted in the final settlement of the boundary between the United States and Great Britain, and in all other cases with which we are familiar.

Thus we see that boundary lines, whether between States or nations, when once established on the face of the earth, agreed upon by all the parties interested and monumented, none of the gymnastic performances of the magnetic needle, variations in isogonic lines, or any modern discoveries as to the migratory character of parallels of latitude, will ever disturb them thereafter. Even the joint action of two States is not sufficient to move a boundary line that has once been established, until such action has been ratified by an act of the United States Congress.

Any one desiring to pursue this subject farther will find ample satisfaction in the final report of the New York commissioners, to which the surveyor's (Maj. Clarke) report is appended, 1886. What map of New Hampshire shows any part of that State limited by the 45th or any other parallel of latitude?

N. SPOFFORD,

Surveyor for Massachusetts on her northern boundary.
Haverhill, Mass., Dec. 31, 1894.

Japanese Athletics.

Athletics hold an important but subordinate position in the schools of Japan. Once a year there is a gathering of all the students in a district to engage in athletic contests. In those seen by Mr. Hearn, and described in "Glimpses of Unfamiliar Japan," six thousand boys and girls from all the schools within a distance of twenty-five miles were entered to take part. A circular race track, roomy enough for an army, allowed four different kinds of games to be performed at the same time.

There were races between the best runners of different schools, and races in which the runners were tied together in pairs, the left leg of one to the right leg of the other.

Little girls—as pretty as butterflies, in their sky blue hakama and many-colored robes—contested in races in which each one had to pick up as she ran three balls of different colors out of a number scattered over the turf.

The most wonderful spectacle was the dumb bell exercise. Six thousand boys and girls, massed in ranks about five hundred deep; six thousand pairs of arms rising and falling exactly together; six thousand pairs of sandaled feet advancing or retreating together at the signal of the masters of gymnastics, directing all from the tops of little wooden towers; six thousand voices chanting at once the "One, two, three," at the dumb bell drill: "Ichi, ni—san, shi—go, roku—shichi, hachi."

The games began at eight o'clock in the morning and ended at five in the evening. Then, at a signal, fully six thousand voices pealed out the national anthem, and concluded it with three cheers for the Emperor and Empress of Japan. The Japanese, instead of shouting when they cheer, chant with a long cry, "A-a-a-a-a!" which sounds like the opening tones of a musical chorus.

Wreck of an Engine.

A serious accident occurred recently to the great engine in the blast furnace of the Carnegie works at Braddock, Pa. The engine was used for four years to furnish the hot air for two of the great furnaces. The engine was disabled by a mass of iron falling on it from a height of twenty feet. Several of the pipes were crushed, and the engine "ran away" and was broken to pieces by the violence of its own action. The fly wheel, which measures thirty feet in diameter, flew apart, and pieces of it weighing two tons were hurled more than a block away. The engine house was demolished. The loss is about \$15,000, and it will necessitate closing the furnaces for an indefinite period.

The output of the furnaces was about 250 tons per day, and over 300 men employed in this department will be thrown out of work.

Nut Planting.

To the amateur planter, says a writer in *Garden and Forest*, no class of the larger seeds of trees and shrubs causes more disappointments and elicits as many questions as do the various kinds of fruits known as nuts. The cause is generally a lack of knowledge, of proper treatment or carelessness. It does not seem to be generally understood, although the fact has been stated over and over again in horticultural journals, that many of these seeds retain their germinative power for a comparatively short time after maturity, unless they find the proper conditions for their preservation. The acorns of the white oak, *Quercus alba*, for instance, often crack and sprout and show the so-called root before the fruit falls from the tree. If these acorns are gathered and allowed to dry for a few weeks before planting, it is unlikely that any of them will grow. The same result follows in nature, if they fall on ground which is hard and dry and continues so for some time afterward, but if the ground is moist, the radicle or incipient root will soon enter it and be secured from drying, unless the soil itself should be deprived of moisture. What is true of the white oak is true of other species, although often in a much less marked degree. Some of the black oak group, for instance, bear acorns which are slower in germinating and appear to preserve their vitality better under adverse conditions. It is destructive to the vegetative power of all acorns to collect them in the autumn and keep them uncovered in an ordinary dry room to be planted in spring. But any of them may be preserved for months if simply packed or mixed with moist, but not wet, sand, soil or moss, and kept in a cool temperature, such as would prevail under a light covering of leaves or soil in the open air. Similar treatment must be given to hazel nuts, chestnuts and to beech nuts. In all cases care should be taken to mix in plenty of soil, or to place the nuts in layers so that they do not touch each other, and any tendency to heat and consequent moulding should be guarded against. Butternuts, walnuts and hickory nuts will not grow readily, or at all, if allowed to become thoroughly dried or cured, although the kernels may preserve a fresh appearance for years after germinative power is lost. They will, however, keep their vitality much better and longer than acorns under the same conditions.

As a rule, direct planting in the open ground as soon as the seed is collected is to be preferred, wherever practicable, for most kinds of nuts and acorns.

Among objections to this system are (1) the liability of the larger nuts to destruction by squirrels, of the thinner shelled ones by mice and some other rodents, or by birds; and (2) the action of frost in heaving the nuts out of the ground. Where the depredators can be guarded against, the heaving action of frost may be obviated by a covering of leaves or boards laid over the seed. Some growers aim to plant after hard freezing weather has set in, because there is then less liability to disturbance by animals. In this system of planting an extra quantity of seed is required to allow for failures or mishaps, just as is the rule with many field crops.

Walnuts, hickories and oaks generally form long tap roots, and some persons consider it an advantage to have the seed planted where the trees are to remain permanently, as it is generally found expedient to cut the tap root when transplanting. When the seed is planted where the tree is to remain, experiments have shown that these undisturbed trees make a much faster growth, in their early years at least, than those whose main roots have been cut.

The Penny Juggler.

A writer on the streets of old Paris gives in *Blackwood's Magazine* the description of a wonderful juggler, who must, however, have performed the following trick by skill rather than by deception:

He asked the crowd for pennies, that is, pieces worth two sous; he put five of them into his right hand, played with them, tossed them a few times in the air, and then suddenly flung them straight up to a height which seemed above the housetops.

He watched them intently, as they rose, and as they turned, and began to fall, he opened, with his left hand, the left pocket of his waistcoat, and held it open, perhaps two inches.

Down came the pennies, not loosely or separated from each other, but in what looked like a compact mass. He gazed at them fixedly, shifting his body slightly, so as to keep under them—he scarcely had to move his feet at all—and crash! came the pile into his waistcoat pocket.

He repeated the operation with ten pennies, and finally he did it with twenty. Yes, positively with twenty! It almost took one's breath away to hear the thud. Never did he miss, and never did the pennies break apart or scatter. They stuck to each other by some strange attraction, as if they had become soldered in air. There was evidently something in the manner of flinging that made them hold together.

After wondering each time at the astonishing skill of the operation, I always went on to wonder what

that waistcoat pocket could be made of, to support such blows. The force, the dexterity, and the precision of the throwing—some sixty feet high, as well as I could guess—and the unflinching exactness of the catch were quite amazing. The pennies went up and came down in an absolutely vertical line.

The Forests of the National Domain.

The small company of forward-looking people who, in the face of almost universal apathy, had been for years urging the necessity of some rational system of management for the forests on our national domain, felt greatly encouraged ten years ago when President Arthur was moved to mention the subject in one of his annual messages. We have no systematic forest policy yet, not even the beginning of such a policy, but we are no longer surprised or unduly elated over the fact that men in places of high authority consider the matter worth talking about, at least. President Cleveland, like his immediate predecessors, in his message to Congress, which assembled last month, strongly advised that some adequate protection should be provided for the areas of forest which had been reserved by proclamation, and he also recommended the adoption of some comprehensive scheme of forest management. He condemned the present policy of the government of surrendering for small considerations immense tracts of timber land which ought to be reserved as permanent sources of timber supply, and urged the prompt abandonment of this wasteful policy for a conservative one, which should recognize in a practical way the importance of our forest inheritance as a vital element of the national prosperity.

The House of Representatives, too, has taken prompt action upon Mr. McRae's bill, entitled, An Act to Protect Public Forest Reservations. The provisions of the bill are simple. It authorizes the employment of the army to patrol these reservations, as has been done effectively in the Yellowstone Park and in the Yosemite Valley, and it empowers the Secretary of the Interior to make regulations in regard to their occupancy, to utilize the timber of commercial value they contain, and to preserve the forest cover from destruction. It also empowers the Secretary of the Interior to cut and sell timber on non-reserved lands under the same rules as those made for the forest reservations, provided that it shall be first shown that such cuttings shall not be injurious to the public interests. The bill had some unfortunate features, but any system which regulates the use of public timber is better than the indiscriminate plunder that has been going on hitherto, and the authorization to use the military for protective purposes is altogether commendable. The bill was amended, however, so as to strike out, if we understand it correctly, the provisions relating to non-reserved lands, and it restricts the sale of timber on reservations to trees that are dead or mature, thus limiting skilled forest practice, instead of authorizing trained foresters to make their own selection, and, worse than all, it grants free supplies of timber from the reservations to miners and settlers.

It is to be hoped when this measure comes before the Senate that its original features will be restored. In its present form it does little more than to expose the timber on the reservations to new dangers. We are judging, it is true, from newspaper accounts, and the published text of the bill may show that the amendments are not so bad as they seem. If military protection is assured, that is one step forward, but if such protection is made possible only when the War Department shall consider it worth while, it is a very short step, indeed. No doubt, any measure which gives the assurance of efficient policing of the reservations, or efficiently controls the cutting of public timber, is to that extent a gain, but we certainly want something more definite and decisive than the McRae bill as it now stands.

And, while measures of this sort are being prepared and pressed for passage, why shall we not take immediate steps to examine this magnificent forest property of ours in a more thorough manner than has yet been done, so that we can obtain facts to guide us in framing future laws, or, at least, to enable us to administer them intelligently? Seven years ago we argued the withdrawal of all these lands from sale until a comprehensive report should have been made by some commission capable of deciding what lands to sell and what to hold forever in forest, and we then proposed that, pending such a report, they should all be put under military protection. Why not provide for such a commission now and begin the investigation at once? This work would not interfere with the adoption of any protective policy, and certainly we can get no laws which go farther and deeper, and furnish a comprehensive system of forest management until we have secured possession of forests to manage. The appointment of such a commission need not be deferred until the passage of a protective law. Its creation would be entirely independent of other action. The work of the commission certainly would not obviate the need of forest protection. It would be in quite another field to furnish facts as a basis for future

legislation which shall embrace a detailed management of the forests. If such legislation were devised at once, the very first thing done by the officials created under it would be to make just such a forest survey as a commission would make. This means that the appointment of such a commission as we contemplate would not disturb the administration of any law, but would in every way be in harmony with it, and help to carry out its spirit.

The nation holds these magnificent forests in trust for future generations. We certainly cannot know too much about their extent, their value and their character, and we cannot learn these things too soon.

No Congressman who opposes other forest laws need object to the inauguration of such a survey, because a commission can do nothing except to disseminate knowledge and furnish facts as a foundation for future action. Even if every recommendation of the commission should be rejected, we can think of nothing which would be a more powerful stimulus to public opinion than a comprehensive report upon our forest resources. The discussion which would be aroused by such a report, with its accompanying recommendations, would be an educational force of the highest value, and our only hope for legislation, immediate or in the future, depends upon the creation of such a public sentiment as will compel action.—*Garden and Forest.*

Problem in Railroad.

The big siege mortars now being put in place at Fort Point have occasioned considerable difficulty in transportation. Even after arriving here trouble was experienced in hauling them through the city, and the commanding officer at the Presidio seemed imbued with fear that the roads there would be ruined by the transportation of the big dogs of war. Bringing them across the continent was a job. They weigh 1,341,000 pounds. The mere weight was not of so much importance, but the size of the pieces made it hard work. The ordinary railroad car is ten feet wide, but the circles on which the mortars revolve are solid circles of cast steel, fourteen feet in diameter and two feet thick. They could not lie flat on a car, because they could not go along without jamming or knocking other cars off the track. Furthermore, there is a rule which forbids cars to be loaded higher than fourteen feet from the top of the rail. It looked at first as if it were nearly impossible. It was the Pennsylvania road that had to do the thinking out of the scheme, for that road had the task of carrying them to Chicago. This is the way it was done:

A slot was cut in the bottom of a gondola car, such as is used for carrying coal. This was made wide enough to let in edgewise the circles which belong to each gun. Of course that weakened the car, and long timbers had to be bolted on the floor of the car and to the cross piece in order that it would not collapse. The two circles which were to go on each car were hoisted by a steam derrick and suspended in the slot at just the right height. To tell the truth, the car was technically loaded seven inches too high, but practically there was no violation, since the height of 14 feet 7 inches was reached at only one point in the center of the car, and no brakeman would be required to stand there. The lower rim of the axle has sufficient clearance at the bottom—half an inch above the track level would have been enough—but about four inches was taken. The big circles were suspended at that height, while the structure that was to hold them was built of pine timbers 6x8. These were bolted with tie bolts as securely as possible.

Six cars were so arranged, and the six mortars, with other gear, were loaded on ten other cars, which were not specially treated. The train thus carried half the load of twelve mortars on one trip. The route was on the Pennsylvania to Elizabeth over the tracks of the Central road, thence to San Francisco via the Chicago, Rock Island, and Pacific, the Union and Central Pacific roads.

Astonished Mules.

Six mules that had for four years hauled cars in the lower workings of the Spailand coal shaft, near Lacon, Illinois, were brought to light recently, says an exchange. In all that time the mules had seen no light stronger than the flicker of the Davy lamps the miners carried. The sun was in its zenith when they reached the surface. The astonished mules closed their eyes to shut out the flood of light and kept them tightly closed while they were led to the pasture lot, a mile distant, and turned loose. There they stood trembling as if afraid something evil was about to befall them. Presently they half opened their eyes and peered round in amazement. When they had become accustomed to the sunlight they elevated their heads. Toward sundown they broke into a chorus of joyous brays. After a quarter of an hour of that music they took to kicking, jumping, whirling around the teetotums, and rolling on the sod as if they had gone mad. The sun and pure air were more to them than food, and they refused everything put before them to eat.