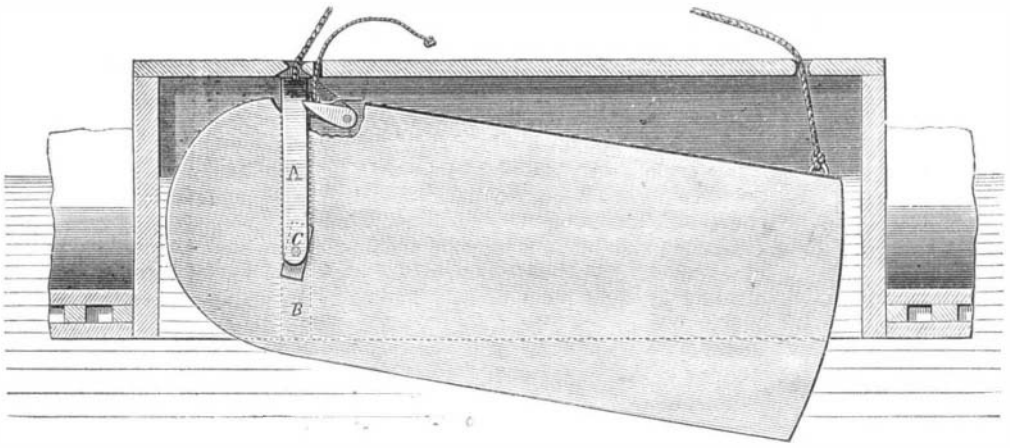
Improved Center-board.

The subject of this invention is a new method of hanging center boards used on small vessels. By an improved method of hanging them the vessel is controlled with much more ease and certainty on rough water and may be run in shallower water than with the old style of board.

The inventor provides a yoke, A, which slides in a groove in the casing, B, straddles the center-board and is confined by a bolt, C. The usual tackle is fastened to the upper end of this yoke and another line to the rear of the board. It is easy to see, therefore, that by lowering either one or the other of these lines, or both at the same time, a greater or less amount of the center-board surface will be below the vessel, and that it is capable of being placed on line with the heel when desirable. These fixtures can be applied to boards now in use, and any change may be made in the shape of the upper end of the yoke so as to use different kinds of tackle, according to the weight and size of the board.



HALL'S CENTER-BOARD.

A patent was obtained on this invention through the Scientific American Patent Agency on Feb. 20, 1866, by J. F. Hall, of Westerly, R. I., whom address for further information.

Periodic Phenomena.

Considerable interest attaches to what may be termed the "periodic phenomena" of nature. Of such a character are the appearance and disappearance of animals, as bats and badgers, which conceal themselves during the winter, and pass through a period of hibernation; the change of dress at different seasons by the ermine, the stoat, and their allies; the coming and going of the regular winter or summer migratory birds; the retirement and hibernation of reptiles; the movements of certain fish up and down stream for the purpose of spawning; the appearance, transformations, and disappearance of insects; the leafing of trees; the flowering of plants; the ripening of seeds; the fall of leaves—all these, and more, are worthy of the attention of the lover of nature, and not beneath the dignity of man. Linnæus constructed for himself a floral clock, in which the periods of time were indicated by the opening or closing of certain flowers. Gilbert White, and others since his time, not disdaining to be his disciples in such a work, constructed a calendar, of which periodic phenomena presented themselves to their notice. Humboldt observes of the insects of the tropics, that they everywhere follow a certain standard in the periods at which they alternately arrive and disappear. At fixed and invariable hours, in the same season, and the same latitude, the air is peopled with new inhabitants; and in a zone where the barometer becomes a clock (by the extreme regularity of the horary variations of the atmospheric pressure) where everything proceeds with such admirable regularity, we might guess blindfold the hour of the day or night by the hum of the insects, and by their stings, the pain of which differs according to the nature of the poison that each insect deposits in the wound. And the Rev. Leonard Jenyns, the naturalist, remarks:—"If an observant naturalist, who had been long shut in darkness and solitude, without any measure of time, were suddenly brought blindfolded into the open fields and woods, he might gather with considerable accuracy from the various notes and noises which struck his ears, what the exact period of the year might be.

All such observation as we have alluded to are easily made and as easily recorded, and of all, none are of more interest than the migratory movements of birds. We know that some visit us in the spring and abide during the summer; others direct their flight hither late in the autumn, and spend with us their winter. But why this change, whence do they come, and whither do they go? We can partly answer this question, but only partially. We may declare, in general terms, that self-preservation and the perpetuation of the species, is the great moving cause. That the journey is undertaken in search of food, or a milder climate, or both, as a consequence the former of the latter, or in search of suitable conditions for rearing their young; yet there are many special circumstances in which this answer is inapplicable or insufficient."

Knapp, in his "Journal of a Naturalist," remarks of the willow wren:—"It is a difficult matter satisfactorily to comprehend the object of these birds in quitting another region, and passing into our island. These little creatures, whose food is solely insects, could assuredly find a sufficient supply of such diet during the summer months in the woods and thickets of those mild regions where they passed the season of winter, and every bank and unfrequented wild would furnish a secure asylum for them and their offspring during the period of incubation. The passage to our shores is a long and dangerous one, and some imperative motive for it must exist; and, until facts manifest the reason, we may, perhaps, without injury to the cause of research, conjecture for what object these perilous transits are made."

The record of periodic phenomena made in the same district over a series of years is always of interest; but contemporaneous records made at numerous stations distant from each other, and in which the same kind of observations are made, would be of more interest still. Take, for instance, the first appearance of a swift for ten successive years in twenty stations between the Isle of Wight and Caithness; or the last note of the cuckoo heard between the Land's End and the Tweed. Many such trifles, apparently insignificant in themselves, become of importance when carefully and faithfully recorded, and such a work may be accomplished by those who make no pretensions to be men of science, but are content to call themselves "lovers of nature."
—*Scientific Gossip.*

GORDON'S BIT FASTENING.

Every trade has some special annoyance or vexation appertaining to it which tries the temper and delays the workman, and we are sure that many can bear witness to one trial carpenters and joiners have to bear; that is, when withdrawing a bit from a hole just bored, to have it part company with the brace and fall out. This does not matter much where there is but one hole to be made but when there are many the evil is a serious one.

The reader will see in this engraving a remedy for it. The shank of the brace is provided with a screw thread, A, and nut, B. This nut, when screwed up, forces a jaw, C, up to the protruding end of the bit, and also against the body of it below, so that it is firmly held in place beyond the possibility of accidental detachment.

Besides the sense of security thus given, the bit bores better and straighter. Sometimes the shanks of the bits do not fit the squared socket in the brace, and they wabble about. With this fastening any bit can be securely held.

Patented through the Scientific American Patent Agency on Jan. 16, 1866, by J. P. Gordon, whom address at West Garland, Me., for further information.

POLYTECHNIC ASSOCIATION OF THE AMERICAN INSTITUTE.

INFLUENCE OF INVENTIONS ON CIVILIZATION.

Dr. R. P. Stevens read a long paper on the "Influence of Inventions on Civilization." The paper was mostly made up of statements of facts showing the wonderful effect of different inventions in increasing the rewards of labor and improving the condition of mankind. The most impressive of these statements was one made to illustrate the effect of railroads. "When Queen Elizabeth moved her court, 24,000 horses were called into requisition, and the consumption of provisions was sufficient to support 190,000 men. The royal progress was more dreaded than the march of an invading army, and the region through which it passed was reduced to famine from which it required years to recover. When Queen Victoria visits Scotland, she is carried in a special train at an expense of about $5,000."

EXPERIMENT TO ILLUSTRATE THE ACTION OF WATER IN BOILERS.

Mr. Norman Wiard presented an apparatus to illustrate the sudden rise and fall of water in steam boilers. He had a cylindrical glass beaker, about four inches in diameter and twelve inches in hight, divided by ten tin diaphragms half an inch apart. The lower diaphragm had an inch hole through the center, and the one next above four half inch holes near the periphery, and all the diaphragms were punched in the same alternate manner, about one-seventh of the area being removed. The object of these diaphragms was to obstruct the escape of bubbles of steam which were formed at the bottom of the beaker. The vessel was filled with water to a level with the diaphragm next to the upper one, and the water was made to boil by a spirit lamp under the beaker. So soon as ebullition commenced, the surface of the water rose about an inch and a half; the action being manifestly due to an increase of volume by so large a portion of the space being occupied by bubbles of steam. On injecting a very little cold water, which was led by a pipe to the bottom of the beaker, the boiling was stopped, bubbles of steam ceased to be formed, and the surface of the water instantly fell to its first level.

The experiment was designed to illustrate the cause of the sudden fall of water in boilers on the cessation of ebullition—a phenomenon that has been frequently observed by engineers, especially in boilers having narrow water spaces, where the free rise of bubbles of steam to the surface is obstructed. The boiling may be stopped either by opening the furnace doors, or by starting the feed pump, or by closing the safety valve.