

MARINERS' COMPASS.

Little Known of the Real Origin of the Instrument.

ITS USE BY THE CHINESE.

This Wonderful People Knew of the Magnetic Needle Long Before the Christian Era—The Claims of Gioia, the Pilot, and the Credit Due Him.

Much interest must forever attach to the discovery of that valuable instrument the mariner's compass, and yet there are few subjects concerning which less is known. For a period the honor of the invention was ascribed to Gioia, a pilot, born at Pasitano, a small village situated near Amalfi, about the end of the thirteenth century. His claims, however, have been disputed.

Much learning and labor have been bestowed upon the subject of the discovery. It has been maintained by one class that even the Phoenicians were the inventors, by another that the Greeks and Romans had a knowledge of it. Such notions, however, have been completely refuted.

One passage, nevertheless, of a remarkable character occurs in the works of Cardinal de Vitty, bishop of Ptolemais, in Syria. He went to Palestine during the fourth crusade, about the year 1204. He returned afterward to Europe and subsequently back to the Holy Land, where he wrote his work entitled "Historia Orientalis," as nearly as can be determined, between the years 1215 and 1220. In chapter 91 of that work he has this singular passage:

"The iron needle, after contact with the loadstone, constantly turns to the north star, which, at the axis of the firmament, remains immovable while the others revolve, and hence it is essentially necessary to those navigating on the ocean."

These words are as explicit as they are extraordinary. They state a fact and announce a use. The thing, therefore, which essentially constitutes the compass must have been known long before the birth of Gioia. In addition to this fact, there is another equally fatal to his claim as the original discoverer.

It is now settled beyond a doubt that the Chinese were acquainted with the compass long before the Europeans. It is certain that there are allusions to the magnetic needle in the traditional period of Chinese history, about 2,000 years before Christ, and a still more credible account of it is found in the reign of Chingwang of the Chow dynasty, before Christ 1114.

All this, however, may be granted without in the least impairing the just claims of Gioia to the gratitude of mankind. The truth appears to be that the position of Gioia in relation to the compass was precisely that of Watt in relation to the steam engine—the element existed; he augmented its utility.

The compass used by the mariners in the Mediterranean during the twelfth and thirteenth centuries was a very uncertain and unsatisfactory apparatus. It consisted only of a magnetic needle floating in a vase or basin by means of two straws on a bit of cork supporting it on the surface of the water.

The compass used by the Arabians in the thirteenth century was an instrument of exactly the same description. Now, the inconvenience and inefficiency of such an apparatus are obvious. The agitation of the ocean and the tossing of the vessel might render it useless in a moment.

But Gioia placed the magnetized needle on a pivot, which permits it to turn to all sides with facility. Afterward it was attached to a card divided into thirty-two points, called rose de vents, and then the box containing it was suspended in such a manner that, however the vessel might be tossed, it would always remain horizontal.—Electrical Engineer.

Stung. The old gentleman went into the parlor the other night at the witching hour of 10:30 and found the lights out and his daughter and a dear friend enjoying a tete-a-tete in a corner by the window.

"Evangeline," said the old man sternly, "this is scandalous!" "Yes, papa," she answered sweetly. "It is candleless because times are hard. Lights cost so much Ferdinand and I said we would get along with the starlight."

And papa turned about in speechless amazement and tried to walk out of the room through a panel in the wall paper.—Exchange.

The Difference. "Father," said little Rollo, "what is the difference between farming and agriculture?" "Well, my son, for farming you need a plow and a harrow and a lot of other implements, and for agriculture all you need is a pencil and a piece of paper."—Washington Star.

The Mess in the Oven. "How came such a greasy mess to the oven?" said a fidgety old spinster to her maid of all work. "Why," replied the girl, "the candles fell into the water, and I put them into the oven to dry."—London Tatler.

Mildew. An easy method of removing mildew is to place the article in a warm oven for a few moments and then brush it.

When you forget there are others who are nearing a burned bridge.

JUST IN TIME.

The Squire Wasn't Actually Nigh, but He Was a Little Close.

They were discussing the salient traits of old Squire Gregson's character, the funeral being a thing of the past. "Some way or 'nother, between his goin' an' the buryin', nobody felt free to speak," Abel Nutting had said as an introduction to his remarks. "It seemed more'n likely he'd come to again an' call us to account, same as usual."

"He was free to give to philanthropy an' the church," said Barton Sedgwick when his turn came, "but in the family circle I called him kind o' close. I won't go so fur's to say he was act'ly nigh, but he cert'ly was kind o' close."

"As how?" inquired three voices in unison. They all had plenty of instances of the old squire's "closeness," but it was Barton's privilege to speak first, he being a cousin once removed. "Well, I was there to a Sunday dinner with him last December," said Barton slowly. "He invited Sally an' me, same as always, once a year."

"Well, Sally had one o' those stuffy colds that make you feel worse'n if you had pneumonia, an' she vowed she wouldn't go. She said she couldn't taste anything anyway, an' the mere thoughts o' his cold pork an' boiled potatoes went against her. But she wanted I should go for polley, same as all us relations went, an' I did."

"Well, when I got there an' told squire he said, 'Sally not comin'?' an' he clipped it right out into the kitchen, leavin' the doors open all the way."

"Here," he said to old Jane Willis, that cooked an' done for him, "have those potatoes boiled soft yet? That's good. You lift out Mis' Sedgwick's potato, an' it'll be just right to fry for my breakfast tomorrow," he said, "for Mis' Sedgwick is kep' at home with a cold. Lift it out careful! That's right!" "An' when he come back to me he was all creased up with smiles, he was so pleased with himself."—Youth's Companion.

SEEING UNDER WATER.

The Refraction of Light and the Limiting Angle of Vision.

One of the most peculiar things in connection with life under water is what is known as the limiting angle of vision. This applies to fishes, divers, submarine crews and, in fact, any being possessing the power of sight and desiring to look through the water at objects in the air. The effect is not due to a defect in vision, but to the refraction or bending of light, and no telescope or other optical instrument can get around it.

The effect consists of the impossibility of seeing anything on the outside unless the observer directs his line of sight within forty-eight degrees of the vertical. If a forty-nine degree angle or over is taken, the surface, no matter how clear the water is, acts as a perfect mirror and reflects objects at the bottom of the water, thus not allowing anything on the outside to be seen. The consequence of this property is the most startling of all, for everything on the outside can be seen and thus has to be seen in the cone described by the forty-eight degree angle from the eye. This shows all outside objects huddled together and appearing high in air. Thus, if one dives into the middle of a wide river, on looking up the banks will appear close together, but, at a great distance from the observer, high in air.

This angle is called the "critical" angle and of course varies with the two media in contact. If one desires to make the experiment a square glass box or an aquarium will answer very well. Suspend this from the ceiling or support it on a wall bracket and look under it at an angle. The phenomenon will be observed as indicated. The clearer the water and the stronger the light the more clearly will things appear.—Chicago Record-Herald.

Why He Was a Heathen.

Sir Arthur Paushaw related an amusing story of a Mohammedan servant who when asked his religion replied: "Beg pardon, sar, I'm a heathen." When asked by his master what he meant by a heathen the man answered:

"Beg pardon, sar, a worshiper of stocks and stones." "Confound it," remarked the master. "I can't keep a man like that in my service."

To which came the immediate rejoinder: "Beg pardon, sar, in your highness' service no time to worship anything!"—London News.

He Spoke Too Soon.

A well known business man attended his daughter's commencement exercises at an eastern college. He had been greatly pleased with the beauty and dignity of the exercises and was discoursing to his wife upon the refining influences of college life. Suddenly his impressive monologue was cut short. A girl in cap and gown came dashing down the steps of the main hall waving her diploma and shouting, "Educated, by gosh!"—Ladies' Home Journal.

Not Anxious.

"You have quite a number of the poets," said Goodby, who was inspecting Woody's library. "Ah, there's Browning! Do you understand him?" "No; I don't," said Woody. "Ah," said Goodby, continuing his examination, "have you Præd?" "Certainly not. What's the use of praying? I ain't anxious to understand him."—Philadelphia Record.

True honor leaves no room for hesitation or doubt.—Plutarch.

MAGNETISM.

Some of the Peculiar Properties of This Strange Force.

The true nature of magnetism as such, of course, is not known. All that we can be sure of is that magnetic attraction does not radiate outward in all directions as does light, but simply acts along lines consisting of closed curves and called lines of force, these lines connecting the two poles and not extending very far outward between them. These curves may be found very nicely by placing a horseshoe magnet under a thin sheet of paper and sprinkling iron filings on top. The filings will collect along the lines.

Now, as to the different kinds of magnets, there are natural, artificial and electro magnets. The natural ones are found as magnetic ore in the earth, the artificial ones are made by stroking a piece of iron or steel with a magnet, and the electro magnets are caused by the action of an electric current.

Some peculiar things have been noticed in regard to magnetism, among which are the following facts:

It has been observed that fire irons that have rested in one position during the summer months are often highly magnetized, no doubt having been caused by the magnetism of the earth itself by the process known as induction. Other iron articles that stay in one position and do not come in contact with fire or other heat are often found in the same condition, such as iron bars to jail windows and iron railings in front of houses.

The most peculiar observation made, however, was that the upper part of the steel tire of a carriage wheel attracts the north pole of a magnet, while the bottom part, or part in contact with the earth, attracts the south pole. This is in the northern hemisphere only and is fully in accord with the theory of induced magnetism. Of course in the southern hemisphere, where the earth is under the influence of the south magnetic pole, the conditions are reversed.

A magnet dipped into boiling water loses a great part of its magnetism, which is miraculously restored to it on becoming cool again.

A sharp blow given to a magnet will cause it to lose its magnetism. Also the application of heat will have a like effect.

If a magnetic needle be placed over a rapidly revolving plate of copper, although it be separated from it by a thick plate of glass, the needle will revolve in the same direction as the plate.—Exchange.

THE ELEPHANT IN BATTLE.

Most Docile Yet Courageous and Faithful of Animals.

Of the docility of the elephant there is no need to multiply examples. It is said that in India native women sometimes when called away intrust their babies to the care of "the handed one," confident that they will be safe and tenderly handled.

But of all elephant stories surely the finest is that which tells how the standard bearing elephant of the Peish-wa won a great victory for its Maharaja lord. At the moment when the elephant had been told to halt its mahout was killed. The shock of battle closed around it, and the Maharaja forces were borne back, but still the elephant stood, and the standard which it carried still flew, so that the Peish-wa's soldiers could not believe that they were indeed being overcome and, rallying, in their turn drove the enemy backward till the tide swept past the rooted elephant and left it towering colossal among the slain. The fight was over and won, and then they would have had the elephant move from the battlefield, but it waited still for the dead man's voice.

For three days and nights it remained where it had been told to remain, and neither bribe nor threat would move it till they sent to the village on the Nerbudda, a hundred miles away, and fetched the mahout's little son, a round eyed, lisping child, and then at last the hero of that victorious day, remembering how his master had often in brief absence delegated authority to the child, confessed its allegiance and with the shattered battle harness clanging at each stately stride swung slowly along the road behind the boy.—London Times.

A Little Crowded.

A backwoodsman went to New York city for the first time, says the Saturday Evening Post. He stopped at a Broadway hotel which was pretty well downtown. Next morning his nephew, who lives in New York, came to take him out and show him the sights. They walked down Broadway until they got to Canal street. The backwoodsman stopped and contemplated the great congestion of traffic there, hundreds of trucks going every way.

"Son," he said to his nephew, "you have a nice city here, but it 'pears to me that your folks is a hull passel behind in their baulin'."

Must Suit All Tastes.

"My wife wonders why the papers waste so much space on mere news." "What does she read?" "Oh, she reads the weather probabilities, the bargain probabilities, the marriage notices and the love story. But an item about a big battle or the fall of a dynasty looks puffing to her."—Louisville Courier-Journal.

Animals He Had Met.

Little Harry was visiting in the country and while there became very much attached to his cousin's pet dog. "Haven't you any animals at home?" he was asked. "Oh, yes," replied the little fellow. "We have roaches and flies."—Chicago News.

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