

leagues from the island of Farro, noticed for the first time the variation of the needle. A phenomenon says Washington Irving that had never before been remarked. He perceived, adds the author, about nightfall that the needle, instead of pointing to the north star, varied half a point, or between five and six degrees to the north west, and still more on the following morning. Struck with this circumstance, he observed it attentively for three days, and found that the variation increased as he advanced. He at first made no mention of this phenomenon, knowing how ready his people were to take alarm; but it soon attracted the attention of the pilots, and filled them with consternation. It seemed as if the laws of nature were changing as they advanced, and that they were entering another world, subject to unknown influences. They apprehended that the compass was about to lose its mysterious virtues; and without this guide, what was to become of them in a vast and trackless ocean? Columbus tasked his science and for reasons wherewith to allay their terrors. He told them that the direction of the needle was not to the polar star, but to some fixed and invisible point: the variation was not caused by any failing in the compass, but because this point like the heavenly bodies, had its changes and revolutions, and every day described a circle round the pole. The high opinion that the pilots entertained of Columbus as a profound astronomer gave weight to his theory, and their alarm subsided.

Thus, although it is possible that the variation of the needle had been noticed before the time of Columbus, it is evident that he had discovered the amount of the variation, and that it varied in different latitudes. The great philosopher Humboldt, observes on this point, that Columbus has not only the incontestable merit of having first discovered a line without magnetic variation, but of having, by considerations on the progressive increase of westerly declination in receding from that line, given the first impulse to the study of terrestrial magnetism in Europe.

With respect to the dip or inclination of the magnetic needle, which must be regarded as the other element of magnetic direction, there is little doubt that it was known long before the period usually assigned as the date of its discovery—namely, in 1576; for it is difficult to conceive how the variation of the needle should be observed and noted, and not its deviation from a horizontal line. In the above year a person of the name of Robert Norman, who styled himself 'hydrographer,' published a book containing an account of this phenomenon. The title of this work is sufficiently curious to be quoted. It runs: 'The New Attractive; containing a short Discourse of the Magnes or Loadstone, and amongst others his Virtues, of a new discovered secret and Subtil Propertie, concerning the declination of the needle touched therewith under the Plaine of the Horizon, now first found out by Robert Norman, Hydrographer.' In the third chapter we are told 'by what means the rare and strange declining of the needle from the plaine of the horizon was first found.'

Having made many and divers compasses, and using always to finish and end them before I touched the needle, I found continually that after I had touched the yrons with the stone, that presently the north point thereof would bend or decline downwards under the horizon in some quantity, insomuch that I was constrained to putt some small piece of waxe in the south parts thereof, to counterpoise this declining and make it equal again. Which effecte having many times passed my hands without any regarde thereunto, as ignorant of any such properties in the stone, and not before having read or heard of any such matter, it chanced at length that there came to my handes an instrument to be made with a needle of six inches long, which needle, after I had polished, cut off at full length, and made it to stand leuell upon the pin, so that nothing rested but only the touching of it with the stone. When I hadde touched the same, presently the north part thereof declined down in such sort, that being constrained to cut away some of that part to make it equal againe in the end, I cut it too short, and so spoiled the needle wherein I had taken so much paines.

Hereby being straken into some choler, I applied myself to seek further into this effecte; and making certain learned and expert men, my friends, acquainted in this matter, they advised me to frame some instrument to make some exact triall how much the needle touched with the stone would declin, or what greatest angle it would make with the plaine of the horizon.

The author then proceeds to give a number of experiments which he made with his instrument, and which may be regarded as the dipping needle in its first and rudest form. By it he found the inclination or dip to be 71° 50'.

It is remarkable that until within the last century it appears to have been the received opinion that the intensity of terrestrial magnetism was the same at all parts of the earth's surface; or, in other words, that in all countries the needle was similarly affected. And yet few things are more inconsistent; not only is the magnetic force widely different in various parts of our globe, but the magnetic condition itself is one of swift and ceaseless change.

The first person who attempted to collect and generalise observations on the variation of the needle was Robert Halley, who constructed a chart, showing a series of lines drawn through the points or places where the needle exhibited the same variation. This chart was published in 1700, and was preceded by some exceedingly curious papers communicated to

the Royal Society, in which he expresses his belief that he has put it past doubt that the globe of the earth is one great magnet, having four magnetical poles or points of attraction, two near each pole of the equator; and that in those parts of the world which lie adjacent to any one of those magnetical poles, the needle is chiefly governed thereby, the nearest pole being always predominant over the more remote.

The great importance of collecting as much information as possible respecting the laws of magnetism, with a view to the proper understanding of its effects, was fully understood by Halley, as the following passage taken from one of his papers and read before the Royal Society in 1692, singularly attests:

'The nice determination of the variation and several other particulars in the magnetic system, is reserved for a remote posterity. All that we can hope to do is to leave behind us observations that may be confided in, and to propose hypotheses which after ages may examine, amend or refute; only here I must take leave to recommend to all masters of ships, and all others, lovers of natural truths, that they use their utmost diligence to make, or procure to be made, observations of these variations in all parts of the world, as well in the north as in the south latitude, after the laudable custom of the East India commanders; and that they please to communicate them to the Royal Society, in order to leave as complete a history as may be to those that hereafter to compare all together, and to complete and perfect this abstruse theory.'

Halley's theory, or rather hypothesis, which regarded our globe as a great piece of clockwork, by which the poles of an internal magnet was carried round in a cycle of determinate but unknown period, was so far confirmed that his variation chart had been hardly forty years completed, when by the effect of these changes, it had already become obsolete; and to satisfy the requirements of navigation, it became necessary to reconstruct it. This was performed by the aid of various observations furnished by the commissioners of the Navy, and the East India, Africa, and Hudson Bay Companies. But the chart was far from satisfactory, and in consequence of the discordant nature of the observation, no dependence could be placed on it.

[To be continued.]

From the New York Spirit of the Times.

HOW MR PIPKIN BLOWED HIMSELF.

BILL PIPKIN had not been married long, and had not got quite out of the habit of taking a little punch at drinking frolics with his old friends, on particular occasions. He was first late at making excuses for staying out all night now and then; he was terribly pressed with business, and as he took very good care never to come home cross-legged, his wife never suspected anything, all went on very well. One night, however, Bill got rather more than he could carry straight, but he did not find it out till he was on his way home. He would not have Susan know he was in such a situation for all the world, and he began thinking, as well as he could with his head spinning round so, what was to be done to keep her from finding him out.

'Hic—I've got it 'zactly,' said he—(hic) 'Su-Susan knows I'm (hic) terribly fond of m-milk. Well, I'll just take a big (hic) swig of m-milk, and that'll fix all right—so (hic) sh—she'll never (hic) suspect nothin', poor gall.'

Home he went, practising straight walking on the way, and studying in his mind how he should talk straight, so that Susan would not find him out.

When he found the latch, which was on the wrong side of the door, which opened the wrong way, too, he felt round in the dark for more doors than were ever in the house before, and got into ever-so-many shaped rooms, till he found the pantry, where he expected to find some milk. He had no very clear idea as to where it ought to be;—to, after feeling about in every place but the right one, he came to the conclusion to go to his room and ask his wife where it was. The stairs seemed turned upside-down, and the bedroom was changed places with the kitchen, but he made out at last to find the door.

After clearing his throat, and saying over his speech so that he could not make any mistake, he opened the door, and leaning against the door post, listened to hear if his wife was awake. She happened to be sound asleep.

'All the better for that,' thought he. 'Susan,' said he very low.

'Eh?' said Susan, just waking up out of a doze. 'Is that you come home, my dear, so late?—I—'

'Susan!' said Bill, not paying any attention to what she said—his head being full of milk.

'What, my dear?'

'Is there any milk in the house?'

'Yes, dear—but—'

'Susan, Susan!'

'What, dear?'

'What is the milk?'

'In the pantry in the dinin'-room, dear. But had'n't you better come to bed now, it's so—'

Bill did not say a word, but took some terribly long steps in the dark. He found the dinin'-room again, and the pantry, but he could not find the milk anywhere. After trying for about five minutes, he went up stairs, and leaning against the door to steady himself, asked his wife again:

'Susan! Susan!' said Bill, very emphatically.

'Eh—what?' said she, waking up a second time.

'Is there any milk in the house?'

'I told you there was some in the pantry, dear.'

Down went Bill again. This time he felt everywhere, and upset everything, making a terrible racket among the crockery; but no milk could he find.

'Cuss the milk,' said he, 'whar could they put it?'

'In a minute he was at the bed-room door again.'

'Susan, Susan,' said he.

'Susan snuffled the snore short off in the middle.'

'What is it?' said she, rather cross this time.

'Is there any milk in the house?'

'Yes, I told you.'

'Well, whar is it?'

'I told you on the shelf, in the pantry, in the dinin'-room,' said Susan, breaking it off in short mouthfuls of pretty loud Italian.

This rather scared Bill, and put him off his guard.

'Well, Susan,' said he, 'is it tied up in anythin', or is it layin' about loose?'

That was enough—the cat was out of the bag, and no help for it. Mrs Pipkin was bright awake in a minute, and the way Bill got a 'Caudle' that night was enough to sober the drunkenest husband in creation. He never got corned again—and it was more than a year afterwards before he could drink milk in his coffee, especially when Susan was at the table.

THE SENTINEL.

DURING one of Napoleon's remarkable campaigns, a detachment of a corps commanded by Davoust occupied the Isle of Rugen, which they were ordered to evacuate. They embarked with such precipitation that they forgot one of their sentinels, who was posted in a retired spot, so deeply absorbed in the perusal of a newspaper, containing an account of one of the emperor's splendid victories, as to be totally unconscious of their departure. After pacing to and fro for many hours upon his post, he lost patience and returned to the guard room, which he found empty. On enquiry, he learned with despair what had happened, and cried—

'Alas! alas! I shall be looked upon as a deserter, dishonored, lost, unhappy wretch that I am.'

His lamentation excited the compassion of a worthy tradesman, who took him to his house, did all in his power to console him, taught him to make bread, for he was a baker, and after some time gave him his daughter Justine in marriage.

Five years afterwards a strange sail was seen to approach the Island. The inhabitants flocked to the beach, and soon discovered in the advancing ship a number of soldiers of the French army.

'I am done for now—my bread is baked,' cried the dismayed husband of Justine.

An idea, however, suddenly occurred to him and revived his courage. He ran to the house, slipped into his uniform, and seizing his firelock, returned to the beach, and posted himself on sentry; at the moment the French were landing.

'Who goes there?' he shouted in a voice like thunder.

'Who goes there, yourself?' replied one in a boat. 'Who are you?'

'A sentinel.'

'How long have you been on guard?' asked the same voice.

'Five years,' rejoined our man.

Davoust laughed at the quaint reply, and gave a discharge in due form to the involuntary deserter.

NEW WORKS.

LEGEND OF SIR RICHARD BAKER,

SURNAMED BLOODY BAKER.

One day was looking over the different monuments in Cranbrook Church, in Kent, when in the chancel my attention was arrested by one erected to the memory of Sir Richard Baker. The gauntlet, gloves, helmet, and spurs were, as is often the case in monumental erections of Elizabethan date, suspended over the tomb. What chiefly attracted my attention was the color of the gloves, which was red. The old woman who acted as my cicerone, seeing me look at them, said, 'Aye, Miss, those are bloody Baker's gloves: their red color comes from the blood he shed.' This speech awakened my curiosity to hear more, and with very little pressing I induced my old guide to tell me the following strange tale:—The Baker family had formerly large possessions in Cranbrook, but in the reign of Edward VI. great misfortunes fell on them. By extravagance and dissipation they gradually lost all their lands, until an old house in the village, now used as the poorhouse, was all that remained to them. The sole representative of the family remaining at the accession of Queen Mary was Sir Richard Baker. He had spent some years abroad in consequence of a duel; but when he came back to Cranbrook he took up his abode in his old house. He only brought one servant with him and these two lived alone. Very soon strange stories began to be whispered respecting unearthly shrieks having been heard frequently to issue at nightfall from his house. Many people of importance were stopped and robbed in the Glastonbury woods, and many unfortunate travellers were missed and never heard of more. Richard Baker still continued to live in seclusion,

but he gradually repurchased his alienated property, although he was known to have spent all he possessed before he left England. But wickedness was not always to prosper. He formed an apparent attachment to a young lady in the neighborhood, remarkable for always wearing a great many jewels. He often pressed her to come and see his old house, telling her he had a great many curious things he wished to show her. She had always resisted fixing a day for her visits, but, happening to walk within a short distance of his house, she determined to surprise him with a visit. Her companion, a lady older than herself, endeavored to dissuade her from doing so, but she would not be turned from her purpose. They knocked at the door, but no one answered them. They, however, discovered it was not locked, and determined to enter. At the head of the stairs hung a parrot, which, on their passing, cried out, 'Peepoh, pretty lady, be not too bold. Or your red blood will soon run cold.'

And cold did run the blood of the adventurous young damsel when, on opening one of the room doors, she found it filled with the dead bodies of murdered persons, chiefly women. Just then they heard a noise, and on looking out of the window they saw Bloody Baker and his servant bringing in the murdered body of a lady. Nearly dead with fear they concealed themselves in a recess under the staircase. As the murderers with their dead burden passed by them, the hand of the unfortunate murdered lady hung in the baluster of the stairs. With an oath, Bloody Baker chopped it off, and it fell into the lap of one of the concealed ladies. As soon as the murderers had passed by, the ladies ran away, having the presence of mind to carry with them the dead hand, on one of the fingers of which was a ring. On reaching home they told their story, and in confirmation of it displayed the ring.

All the families who had lost relatives mysteriously were then told of what had been found out; and they determined to ask Baker to a large party, apparently in a friendly manner, but to have constables concealed ready to take him into custody. He came, suspecting nothing; and then the lady told him all she had seen, pretending it was a dream. 'Fair lady,' said he, 'dreams are nothing; they are but fables.' 'That may be fables,' said she; 'but is this a fable?' and she produced the hand and ring. Upon this the constables rushed in and took him; and the tradition further says he was burnt, notwithstanding Queen Mary tried to save him.

ROCKS OF LAKE SUPERIOR.

Upon the southern coast of Lake Superior about fifty miles from the falls of St. Mary are immense precipitous cliffs, called by the *voyageur la Poirail*, the Pictured Rocks. This name has been given to them in consequence of the different appearance which they present to the traveller, as he passes their base in his canoe. It requires little aid from the imagination to discern in them the castellated tower and lofty dome, and every sublime, grotesque, or fantastic shape which the genius of architecture ever invented. These cliffs are an unbroken mass of rocks, rising to the elevation of 300 feet above the level of the land, and stretching along the coast for fifteen miles.

The voyagers never pass this coast except in the most profound calm; and the Indians, before they make the attempt, offer their accustomed oblation to propitiate the favor of their Manitas. The eye instinctively searches along the eternal rampart, for a single place of security; but the search is vain. With an impassable barrier of rocks on one side, and an interminable expanse of water on the other, a sudden storm upon the Lake would as inevitably assure destruction of the passenger in his frail canoe, as if he were on the brink of the cataract of Niagara.

The rock itself is a sandstone, which is disintegrated by the continual action of the water with comparative facility. There are no broken masses upon which the eye can rest and find relief. The Lake is so deep that these masses, as they are torn from the precipice, are concealed beneath its waters until it is reduced to sand. The action of the waves has removed every projecting point.

When we passed this immense fabric of nature, the wind was still and the Lake was calm. But even the slightest motion of the waves, which in the most profound calm agitates these eternal seas, swept through the deep caverns with the noise of the distant thunder, and died away upon the ear, as it rolled forward in the dark recesses inaccessible to human observation.

No sound more melancholy or more awful ever vibrated upon human nerves. It has left an impression which neither time nor distance can ever efface.

Resting in a frail bark canoe, upon the limpid waters of the lake, we seemed almost suspended in the air, so pallid in the element upon the towering battlements which impended over us, and from which the smallest fragments would have destroyed us, we felt, and felt intensely our own insignificance.

No situation can be imagined more appalling to the courage, or more humbling to the pride of man. We appeared like a small speck upon the broad face of creation.

Our whole party, Indians, voyagers, soldiers, officers, and servants, contemplated in mute astonishment the awful display of creative power, on whose base we hung; and no sound broke upon the ear to interrupt the careless roaring of the waters. No cathedral no temple built with human hands, no pomp of worship could ever impress the spectator