

THE USE OF OIL.

As the season of winter storms on the North Atlantic is approaching, navigators should note the many instances where serious danger and damage have been avoided by using oil to prevent heavy seas from breaking on board. It will be remembered that on the "Pilot Chart" for last March a full explanation was published, with diagrams, as to the best methods of using oil. Reprints of this explanation and accompanying diagrams can be obtained at any branch hydrographic office.

There are many other cases where oil may be used to advantage, such as lowering and hoisting boats, riding to a sea-anchor, crossing rollers or surf on a bar and from life-boats and stranded vessels. Thick and heavy oils are the best. Mineral oils are not so effective as animal or vegetable oils. Raw petroleum has given favorable results, but not so good when it is refined. Certain oils, like cocoanut-oil and some kinds of fish-oil, congeal in cold weather, and are therefore useless, but may be mixed with mineral oils to advantage. The simplest and best method of distributing oil is by means of canvas bags about one foot long, filled with oakum and oil, pierced with holes by means of a coarse sail-needle, and held by a lanyard. The waste-pipes forward are also very useful for this purpose.

In addition to the reports published last month from vessels that used oil during the St. Thomas-Hatteras hurricane of Sept. 3-12, the following have been received by the United States Hydrographic Office from vessels that encountered the same storm:—

The British steamship "Elgiva" (Capt. Bermpohl), Sept. 4, when in latitude 24° north, longitude 65° west, kept oil-bags at bows and channels to prevent seas from coming on board. The oil had a remarkable effect in smoothing the seas, and the vessel sustained no damage whatever. The British brigantine "Victoria" (Capt. Simmons), in a terrific hurricane, Sept. 5, latitude 26° north, longitude 68° 38' west, lost spars, sails, etc. A quantity of cod-oil was used, and it is thought that it saved the ship's hull from damage, and possibly total loss. The American brig "Mary Bartlett" (Capt. Holmes), Sept. 8, latitude 36° 42' north, longitude 74° 22' west, commenced using oil (paint and kerosene mixed). On Sept. 9, the wind north-east and blowing in terrific squalls, oil was used with great success. The British brig "J. A. Horsey" (Capt. Dowling), in a hurricane off capes of the Chesapeake, Sept. 9-12, used kerosene-oil, but without as great success as if it had been a heavier oil, of which there was none on board. The American schooner "Ralph M. Haywood" (Capt. Baxter), in a hurricane off capes of the Chesapeake, Sept. 9-11, used axle-oil in bags hung over the weather bow. The bags were replenished every two hours; in all, about five gallons being used, and with great success. The Italian bark "Biagino" (Capt. Brignati) encountered the hurricane, Sept. 9-12, after leaving the Delaware Breakwater for Cagliari. The cargo was petroleum, and, as the vessel leaked badly, a large amount of the oil was pumped out. As stated above, a thin oil like refined petroleum has but little effect, and such was the case in this instance. The British steamship "Claribel" (Capt. Macknight) encountered the hurricane, Sept. 9-11, between latitude 37° north, longitude 73° west, and latitude 34° north, longitude 71° west. Oil was used with success, and prevented many a heavy sea from breaking over the vessel.

MENTAL SCIENCE.

Experiments in Crystal-Vision.

THERE is a general tendency, whenever a notion is relegated to the rank of superstitions, to regard all interest in the matter as ending there. Such an attitude neglects to distinguish between error founded upon a false observation of facts and error founded upon a false interpretation of facts: it neglects to consider as well that the origin of this superstition also needs explanation. A superstition is rarely a purely fanciful notion spun from the inner consciousness, but usually contains, though often in a scarcely recognizable form, an element of interesting and perhaps important knowledge. It is with a full appreciation of this latter point of view that an anonymous lady writes in the recently issued number of "The Proceedings of the Society for Psychical Research" upon

the phenomena of crystal-vision, and reviews these in the light of cognate experiments of her own. The phenomenon, though simple, has a very ancient and varied history. It consists in gazing into a crystal, a drop of water, polished metal, a gem, or even the finger-nail, and seeing there reflected certain appearances usually to be interpreted as of prophetic significance. The custom is very widespread in the Orient both in the most ancient and in modern times. It has been found among savages, it has been counted as an instrument of the devil, it has received noble treatment at the hands of the learned before the courts of princes. Like most such customs, it has been surrounded with mystic and religious proceedings, and its exercise controlled by elaborate and fanciful directions. The Assyrians, the Hebrews, the Greeks, the Romans, were acquainted with the process, and give evidences of its use. In early Christian times those who read the future by gazing into a mirror received the title of "specularii." They appear in a church council convened by St. Patrick in 450, while we have a list of procedures against them as heretics in the twelfth century. Although Thomas Aquinas attributes this power possessed by some children to the work of the devil, and though a special condemnation of it was made by the theological faculty of Paris in 1398, the art continued, and in the sixteenth century reached its zenith under the auspices of a court physician or a university professor. Catherine de Medic consulted a magician, who showed her in a mirror how long her sons would occupy the throne. The topic was brought into prominence by the work of Dr. Dee, a very entertaining personage, under whom the process was systematized, and produced wonderful results. Dr. Dee and his associate, one Kelly, of dubious repute, see spirit visitors in their crystal or shew-stone who are described in all detail. Moreover, they hold long conversations with them, though what they learn from the "angelicall beings" is often mere "sermon-like stuffe." The stone is "of that value that no earthly kingdom is of that worthinesse as to be compared to the virtue or dignity thereof;" it is brought to him by angels; it is miraculously restored to him; it is placed in a sanctuary, and shown with great ceremony. We read of many other uses of the crystal: we have instructions whereby to have a spirit enclosed in a crystal stone or beryl glass; and from these mediæval notions we have almost a continuous use of the process down to modern times.

Considering the function of the crystal simply as a means of concentrating the gaze, our author attempts to follow the course of these visions by analogy with other hallucinations, and regards them as consisting mainly of (1) "after-images or recrudescence memories, often rising thus, and thus only, from the subconscious strata to which they had sunk;" and (2) "as objectifications of ideas or images consciously or unconsciously in the mind of the percipient." "The tendency of the conscious memory is so strongly in favor of picture-making, that we may naturally assume this habit on the part of that which is latent or subconscious." This, at any rate, is true for the lady in question; for she is gifted with a remarkable power of visualization, that goes far to explain her success at crystal-vision. When desirous of describing a room in a friend's house, she tells us, "I return in recollection to the occasion of my last visit. I once more occupy the same chair. The carpet at my feet becomes visible, the furniture nearest to my seat, gradually the whole contents of the room, till walls and ceiling complete the picture, and I am able to give an inventory which would not disgrace an auctioneer's clerk." The exercise of this faculty, and especially with regard to phenomena of the unconscious, seems to be much aided by fixation of the attention upon the crystal. To quote from the record of experiments, "Here, for example, I find in the crystal a bit of dark wall covered with white jessamine, and I ask myself, 'Where have I walked to-day?' I have no recollection of such a sight, not a common one in the London streets; but to-morrow I will repeat my walk of this morning with a careful regard for creeper-covered walls. To-morrow solves the mystery. I find the very spot, and the sight brings with it the further recollection that at the moment we passed this spot I was engaged in absorbing conversation with my companion, and my voluntary attention was pre-occupied." Or, again, "I had carelessly destroyed a letter without preserving the address of my correspondent. I knew the county, and, searching in a map, recognized the name of the town, one unfamiliar to me, but which I was sure

I should know when I saw it. But I had no clew to the name of house or street, till at last it struck me to test the value of the crystal as a means of recalling forgotten knowledge. A very short inspection supplied me with 'H. House' in gray letters on a white ground, and, having nothing better to suggest from any other source, I risked posting my letter to the address so strangely supplied. A day or two brought me an answer, headed 'H. House' in gray letters on a white ground." Again, "the question of association, as in all cases of memory, plays an active part in this class of crystal-vision. One of my earliest experiences was of a picture perplexing and wholly unexpected, — a quaint oak chair, an old hand, a worn black coat-sleeve resting on the arm of the chair, — slowly recognized as a recollection of a room in a country vicarage, which I had not entered and but seldom recalled since I was a child of ten. But whence came this vision? What association has conjured up this picture? What have I done to-day? . . . At length the clew is found. I have to-day been reading Dante, first enjoyed with the help of our dear old vicar many a year ago." After these instances (and there are many more in some of which the crystal is purposely resorted to, and often successfully, to see if there be any unconscious information regarding the whereabouts of a missing prescription or a lost key), we may agree with the writer, that "one result of crystal-gazing is to teach one to abjure the verb 'to forget' in all its moods and tenses."

Examples of the objectification of recent sensations are given, but the point is clear enough without instances. Although the author regards recent impressions as a less important element of her dream life and her visualizations than older experiences, she can none the less create a group of figures, and put them in the crystal to see what they will do; "and so far is one's conscious a stranger to one's unconscious Ego, that I sometimes find their little drama so startling and unexpected that I watch the scene with curiosity and surprise." One more instance may be added. The author wanted the date of Ptolemy Philadelphus, felt sure that she knew it and connected it with some important event, but could not recall it. The crystal showed her an old man, "dressed like a Lyceum Shylock," and writing on a big book with massive clasps. Wondering who he was, she decided to carry out a suggestion, and look at the image through a magnifying-glass. The glass revealed the characters as Greek, though the only characters recognized were the numerals "LXX." Then it flashed on my mind that he was one of the Jewish elders at work on the Septuagint, and that its date, 277 B.C., would serve equally well for Ptolemy Philadelphus. It may be worth while to add, though the fact was not in my conscious memory at the moment, that I had once learned a chronology on a mnemonic system which substituted letters for figures, and that the *memoria technica* for this date was, "Now Jewish elders indite a Greek copy."

Our author adds a possible third class of crystal-visions, concerning which she speaks with becoming caution and uncertainty; namely, those that may be connected with telepathy, clairvoyance, and other doubtful faculties. It is true that historically this use of crystal-vision is the most important; and, if we could credit the evidence of wonderful facts revealed by this means, we would indeed have to call in other means of explanation than those science affords. But the methods of using this form of vision for purposes of more or less conscious deception are so various, and lie so close at hand (indeed, our author cites some pertinent cases in which prophetic powers ascribed, alleged to a crystal-seer, were shown to be groundless by the exercise of very ordinary precautions), that we need hardly have recourse to untoward hypotheses as yet. As is well remarked, "it is easy to see how visions of this kind, occurring in the age of superstition, almost irresistibly suggested the theory of spirit-visitation. The percipient, receiving information which he did not recognize as already in his own mind, would inevitably suppose it to be derived from some invisible and unknown source external to himself." A large class of prophecies, too, aid in their own fulfilment; and, in brief, this aspect of the topic presents nothing peculiar to itself, and may be dismissed with the mention of it already made.

We have illustrated in this study the subtlety of the relation between the conscious and the unconscious mental processes. We see what a small proportion of the endless impressions that stream

in upon us through the avenues of sense are consciously added to our mental storehouse, and what a very much larger portion must be at the service of those lower strata of consciousness that at times rise so unexpectedly and so mysteriously into the focus of attention. And finally, just as much of the mystery that surrounded the mesmeric phenomena fell away when men looked for their explanation, not in some peculiar gift of the mesmerist, but in the psychophysic constitution of the subject, so the phenomena connected with crystal-vision become psychologically rational when we seek their explanation, not in the magic properties of the crystal, but in the mind of the seer.

NOTES AND NEWS.

THE American Institute Fair in this city, which will close in a few weeks, is well worth a visit from any person interested in the progress made from year to year in applied science. The electrical and mechanical exhibits are especially good.

— The will of Henry J. Steere, one of the wealthiest men in Providence, who died recently, gives away directly and in trust the sum total of \$1,139,000. The Rhode Island Historical Society gets \$10,000; the Tabor College in Iowa, \$50,000; and Roanoke College at Salem, Va., \$25,000.

— Dr. Frank S. Billings, late in charge of the patho-biological laboratory of the State University of Nebraska, has removed to Chicago, Ill., to resume the study of the non-recurrent diseases of children, — scarlet-fever, mumps, measles, and whooping-cough. Dr. Billings has fitted up a laboratory at 3600 Michigan Avenue, in which he proposes to prepare virus for the inoculation of swine against hog cholera, and to continue the study of that subject. The importance of such a laboratory to the stock-breeders of the country may be great.

— Leo Lesquereux, the Nestor of botanists in the United States and a well-known student of paleontology, died recently at his home in Columbus, O., at the age of eighty-two. Lesquereux was born at Fleurier, near Neufchâtel, in 1806. He was educated in Neufchâtel, and later occupied chairs at several European educational institutions. At twenty-five he became totally deaf. In 1848 he came to this country, influenced to this step by Agassiz. His works on the mosses of North America in conjunction with Mr. James, and on the fossil botany of the same region, are perhaps the best known.

— Mr. Henry O. Avery, in a letter to *Building* on the efflorescence on bricks, says, "During a recent trip abroad, I noticed in several countries a common occurrence of exuding salts on the surface of brick constructions. On questioning several foreign architects about the cause and remedy, there seemed to be a variety of opinions, and from the seeming contradictions I will note down some: 1. Sulphate of magnesia, due to the presence of iron pyrites (sulphide of iron) in the clay. The action of sulphurous acid generated in the combustion of bituminous coal on the magnesia in the clay changes the pyrites to a sulphate of magnesia. 2. Carbonate of soda, probably caused by the lime of the mortar acting upon a silicate of soda in the brick. 3. Carbonate of lime, formed by the leaching of lime from mortar, carbonated by the carbonic acid in the air. 4. Silicate of soda, caused by using salt clay taken near the sea. There is a common theory that the trouble is mostly due to the action of mortar and the brick together; yet the 'Epsom salts' have been known to appear in ornamental parapet walls where there was no mortar, cement, or grouting of any kind. Some say that bricks burned with wood-fire were exempt from the nuisance, but historical architectural records of Boston speak of 'white saline coatings' one hundred years ago, when wood only was used for burning bricks. As to remedies, several are mentioned. The commonest is water and muriatic acid; but this does not always decompose the sulphate of soda, and will not prevent it exuding again. Oil in mortar, carefully laid, is supposed to prevent 'salt-petring,' one gallon to a cask of lime, or two if cement is used; but this has failed as often as it has succeeded. English architects quite frequently employ a solution of fatty matter, quicklime, and cement-powder; and the French and Swiss masons, a mortar