

THE GROS LIFE-BELT.

BY A. FREDERICK COLLINS.

A new life-saving belt that has been attracting a great deal of attention through the severe ordeals given it by the various life-saving societies in France has sufficient merit to demand the consideration of the authorities here in the States.

It is called the Gros life-belt, and is composed of a series of four small, flat sacs or pouches, circular in shape and connected by a tube inclosed in a gauze vest. When the latter is slipped on under the ordinary vest the belt is brought into a position where two of the pouches rest on either side of the back and the other and opposite pouches rest against the back over the scapulae.

Inclosed in both ends of the tube are small metallic cylinders, each of which contains a charge of carbide of calcium. With the outer clothing on, the belt is rendered quite invisible, and can be worn by a passenger during the entire voyage without inconvenience and without being noticed by the other passengers.

According to

the experiment at La Rochelle, a man who could not swim a stroke, but wearing a Gros life-belt, fell overboard and sank. He immediately arose to the surface and continued to float head and shoulders out of the water and with both arms in the air. The time that elapsed from the instant the water touched the carbide until the sacs or pouches were filled with sufficient gas to keep the man afloat was estimated by means of a stop-watch to be two seconds.

The nature of calcium carbide and the construction of the acetylene lamp are so well understood that it is not deemed necessary to recite the action that takes place when water is added to carbide of calcium. Suffice it to say that acetylene gas is instantly generated.

The first photograph shows the flimsy nature of the vest, which weighs but a few ounces, while the third shows how a minute quantity of water attacking the carbide has filled the pouches with gas, the outer covering of the vest being raised to show the sacs; the latter, though very light in weight, are exceedingly strong, as the second picture indicates. All the tests applied to it by the various representatives of the

steamship companies and societies were eminently successful and demonstrated conclusively the wonderful possibilities of the Gros belt as a life-saver.

SNOW CRYSTALS.

BY DAY ALLEN WILLEY.

There are few studies as interesting to a lover of nature as that pertaining to the formation of snow. The deposits of snow as we see them directly after a storm, on tree and bush, and on the ground itself, frequently present spectacles which are not only beautiful, but unique. The material adapts itself to so many designs, that it is unnecessary to say that

far been reproduced through the aid of the camera and microscope have either six points or six sides. A comparison of the illustrations accompanying this article proves the statement, despite the fact that such a variety is exhibited in the collection. Taking Fig. 4 for example, the hexagon shape is almost perfectly outlined. In Fig. 5 we find the hexagon, but with the corners elongated, although the tracing of the interior is a perfect hexagon and most beautifully reproduced. Fig. 10 is a further modification, in which it will be noted that at the time the crystal was photographed, others were apparently being formed at each of the six corners. Here is another very artistic combination, in which can be traced a number of these figures, if one follows closely the lines on the surface of what might be called the center piece. Another beautiful design, which is a further variation of Fig. 4, is that of Fig. 1. Here the crystal has been so divided that the corners form by far the largest portions.

Figs. 2, 3, and 8 form an interesting study of the development of a crystal. As will be noted, the branches



1. Life-Belt as Worn Under a Vest.



2. Life-Belt Inflated.



3. Life-Belt Inflated to the Fullest Extent.

THE GROS LIFE-BELT.

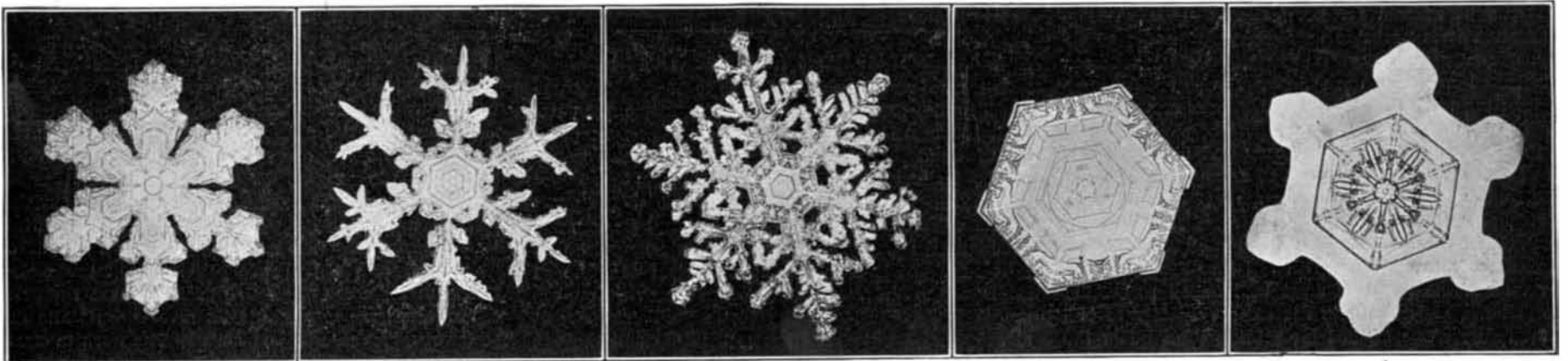
nature frequently plays the part of a sculptor, using snow as a human molder utilizes clay.

If some of the minute particles which compose a snow storm are separated from the rest, and examined with the aid of a microscope, the work of nature is shown in even a more remarkable way; for although the figures represented by the snow crystals are almost numberless in their variety, it can be seen, even with the naked eye in some instances, that a system is employed in their formation which is literally marvelous. To the development of micrography is due the credit of preserving on the negative many of these images, so that they can be studied at leisure without fear of their being destroyed by a change in temperature. From the collections of such views now in existence, much valuable data has been obtained regarding the creation of a snow flake, as the different designs give an idea of the way in which they are formed.

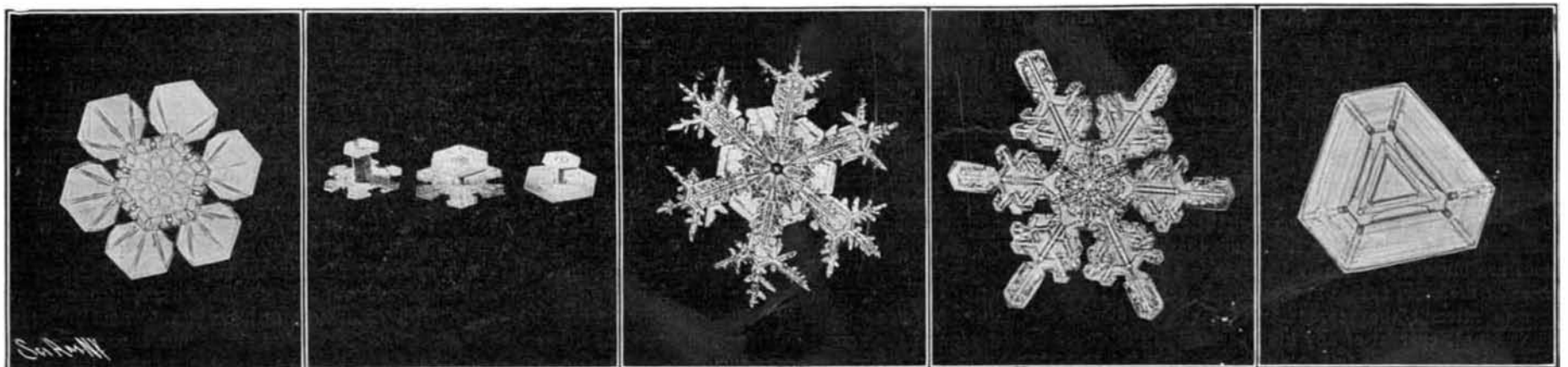
In examining snow crystals, one remarkable fact that strikes the attention of the investigator is the repetition of the hexagon in some form. With very few exceptions, all of the crystals which have thus

which project from the center are six in number, but in Figs. 2 and 3 the nucleus of the formation is a hexagon in miniature, that in Fig. 2 being one of the most delicately and perfectly outlined of the entire series of crystals illustrated. In fact, on it are depicted no less than four clearly defined figures of this kind, while directly in the center are six tiny circles, also arranged in the same shape. Fig. 3 might be called a combination, since apparently it has been formed from coming in contact with another. It represents a single crystal, however, and is merely a freak formation, probably caused by exposure in passing through different strata of clouds.

The series of crystals illustrated are also specially interesting, since they bear such a strong resemblance to familiar objects. Take the three tiny specimens represented by Fig. 7. One might easily believe them to be specimens of inlaid work. The end crystals are also similar to some styles of collar buttons which have recently been manufactured by the jewelers. The photographs of some of the others might be taken for elaborately ornamented needle work, such as center pieces. Fig. 5 is an excellent sample of this work,



HOW SNOW CRYSTALS APPEAR WHEN SEEN THROUGH A MICROSCOPE.



THE CURIOUS FORMS ASSUMED BY SNOW CRYSTALS.