Zone of Calms. Why? The trades may easily be explained in this connection.

4. Currents of air in a room, around doors and windows, may be detected and studied by means of a lighted candle.

5. Chimneys keep the warm upward current from spreading; and it gains velocity in ascending just as a ball gains velocity in falling. Consequently, more air presses through the fire in the stove. Consider the use of very tall factory chimneys, lamp chimneys, etc.

6. Study the circulation of air in a room heated by a stove or radiator.

7. Why is most of the heat of an open fire wasted?

8. Make use of the principle given above to explain circulation of water in the ocean, Gulf stream, etc.

9. When liquids cool at the surface the cooled portion contracts and sinks.

10. Water is a poor conductor of heat, and if kept from circulating, as it is by the solid part of a pudding, it cools very slowly. Hence the time required to heat or cool puddings.

11. Some liquids, like molasses, are apt to burn when heated over hot stoves, because the heated part cannot be pushed out of the way by the cooler part before being heated too much.

Cover a thermometer with ice or snow. Notice that the thermometer remains at 32 degrees until all the ice has melted. Experiments very carefully made show that the temperature of ice just before melting and of the water just after are the same, regardless of the heat applied to melt the ice. When all the ice has been melted, the heat then raises the temperature of the water.

Study carefully and explain—

1. Why ice is put in the ice-pitcher in summer. (Air heats the water; and the water gives up its heat to melt the ice.)

2. Why ice is used in the refrigerator.

3. Why days in March are not so warm as days in September.

4. Why the snow does not all melt on the first warm days of spring.

5. Why the wax in the candle melts so slowly.—*Adapted from Phenix, in Journal of Education.*

The Heavens in February.

In this month the great winter constellations which centre about Orion gradually shift their places to the western half of the sky, while less brilliant star companies, led by Leo and Virgo, occupy the east. At 10 o'clock p. m., in the middle of February, the Milky Way arches the sky in a nearly north and south line. The Great Dipper is high in the northeast and Cassiopeia low in the northwest.

Early in the evening Orion is on the meridian, and advantage should be taken of his favorable position for study of the beautiful star Betelgeuse, in the imaginary giant's right shoulder. This star is remarkable both for its color, a rich topaz, and for its irregular variability. Ordinarily Betelgeuse is about twice as bright as Aldebaran, the leading star of Taurus, but, according to an estimate recently made at the Cape of Good Hope Observatory, it is, this winter, but slightly superior to Aldebaran. It may lose yet more of its light, and attentive observation may result in the discovery of some law governing its variability. That a sun of such presumably enormous magnitude as Betelgeuse possesses should lose, for a time, one-half its radiant power is a phenomenon calculated to arrest attention and excite wonder. Together with observations on its brightness as compared with Aldebaran and with its white neighbor Rigel in Orion's foot, the color of Betelguese should also be carefully watched. There is here an opportunity for amateur astronomers possessed of normal color vision to add something of value to the stock of astronomical knowledge. The colored stars present a fascinating but difficult problem, and a careful record of their hues, arranged on a simple chromatic scale, would be highly interesting and might prove highly important.

A hint of what can be done is conveyed by the fact that Betelgeuse and Aldebaran, although both are sometimes called red stars, have by no means the same color tone, while Antares, another red star, presents a still different tint.

The Planets.

Mercury is a morning star, but it is too near the sun for observation. Venus is also a morning star, and conspicuous for two or three hours before sunrise. She reaches her greatest western elongation on February 10. She is in the constellation Sagittarius. Mars remains the most striking stellar object in the evening sky. He crosses the meridian about 10 o'clock in the middle of the month. He is in the constellation Gemini, south of the twin stars Castor and Pollux, and greatly outdoes them in brightness. His brilliancy diminishes, however, all through February, as the distance between him and the earth is widening at the rate of several hundred thousand miles in a day. Jupiter, in Libra, is an evening star, rising before midnight, and in the course of a few weeks will take the place of Mars as the planetary cynosure. Recent studies of his cloud belts indicate that the giant planet continues to be the scene of stupendous surface changes, which probably affect only the vapors that envelop his globe, but which give rise to a wonderful and beautiful spectacle in the telescope. Saturn is a morning star, rising several hours before daybreak, in the constellation Ophiuchus. Uranus is a morning star in Ophiuchus, five degrees almost directly north of Antares. Neptune is an evening star in Taurus.—*Garret P. Serviss in Scientific American.*