mate, where the variations between winter and summer are very greatly diminished; and, although during the summer we may seldom, if ever, have the thermometer rising above the freezing point, yet in the winter the thermometer should not register such extraordinary degrees of cold as in the north. But here, again, our statements are based on theory; the more important, therefore, is it in the near future to make a clear statement of facts from the result of observations.

It is plain that in meteorology and terrestrial magnetism we have two subjects not only of purely scientific interest, but of vast importance for the more accurate navigation and greater safety of our vast fleets throughout the world. There is one other subject which combines scientific and commercial interest, and that is biology. How far is it possible for us to prosecute seal and whale fisheries, and what must be the conditions of administrative protection? The commercial expeditions of the last three years from Norway and Scotland seem rather to indicate that these fisheries cannot be profitably prosecuted, but still we must acknowledge that there has been hardly sufficient investigation to answer this question decisively. The discovery of guano at Cape Adair, by Mr. Borchgrevink, also opens up a new channel for commercial enterprise. But, apart from the commercial aspect, a very rich biological field lies waiting for us in the Antarctic. Sir James Ross gathered many invertebrate treasures, but these, unfortunately, mostly perished without ever being properly examined. The Challenger was more successful, and Dr. Murray has brought to light some very interesting relationships in the similarity of the fauna of the south and the north Polar seas. In order to carry on this interesting and valuable research, it is necessary to equip an expedition which shall dredge, trawl, and tow net throughout the breadth and depth of the great Southern Ocean. Unfortunately, the Challenger was not an ice-protected vessel, and it would have been unwise for her commanders to have carried on further research than they did in such high southern latitudes. Beyond the mammalian and invertebrate fauna, there is also the vast host of birds and fishes to be studied, about which we know next to nothing. Botanically we cannot hope for much, except possibly in marine algæ. It is interesting to note, however, that Mr. Borchgrevink, of the

Antarctic, found this year on Possession Island a lichen. This is the only recorded land plant found within the Antarctic Circle.

Toward the bathymetrical survey of the Southern Ocean both Ross and the Challenger contributed valu-

THE OLDEST SEMITIC INSCRIPTION (ABOUT 3800 B.C.)

able observations, and the Challenger observations have been lucidly expounded by Dr. Murray, who has brought to light many very interesting facts regarding the distribution of oceanic deposits. But only the borderland of this new world has been touched, and

there still remains a vast field of most interesting and important scientific research. As a result of these investigations Dr. Murray has defined to us what must be more or less the outline of Antarctica, and it is consequently of more interest than ever that a practical survey of this coast line should be made. There has always been a theory of an Antarctic continent, but Dr. Murray's theory differs from all previous ones, inasmuch as it is founded on fact.

To Captain Larsen, of the Jason, who has recently been awarded the Back Grant of the Royal Geographical Society for his valuable Antarctic researches, do we owe the first concrete addition to our knowledge of the geology of the Antarctic. He has landed several times, being the first who ever traveled over the Antarctic ice, and on one or more of his landings secured a most interesting set of fossils. Still, this is only a beginning in the geology and paleontology of the south, and the geologist is enthusiastically eager for further research. Geodetic problems, problems of the Great Ice Age, of oceanic temperature, salinity, and circulation, and other branches of scientific knowledge too numerous to be mentioned here, have to be studied. Such, briefly, is the work of a modern Antarctic expedition.

We do not in the least advocate that such an expedition should ever attempt to reach the south Pole. A rush to the pole is not what we desire, but a systematic survey of the whole south Polar regions, and a continuous series of various observations throughout at least two, if not three years.

It is pleasing to record that the International Geographical Congress has unanimously adopted the following resolution recommended by a most distinguished committee, consisting of Sir Joseph Hooker, Dr. John Murray, Dr. Neumayer, Prof. Von den Steinen, and M. Bouquet de la Grise, namely:

"The Sixth Geographical Congress, assembled at London, 1895, records its opinion that the exploration of the Antarctic regions is the greatest piece of geographical exploration still to be undertaken; and in view of the addition to knowledge in almost every branch of science which would result from an expedition to the south Polar regions, Congress recommends the several scientific societies throughout the world to urge, in whatever way seems to them most effective, that this work should be undertaken before the close of the century."

THE CASTOR OIL BEAN—RICINUS COMMUNIS, LINN.*

By D. F. DAVENPORT.

THE experiments which have been made in my locality have been made at my expense, and the "returns," on account of the cold, and of imperfect knowledge of their culture, have resulted rather disastrously. Still there are many reasons to believe that South Georgia, and especially Sumter County, is admirably adapted to this "bean."

The experiments began by loaning out seed to the farmers in various localities in small lots, and giving a guarantee of a price per bushel delivered in any quantity at Americus, after September 1, 1894. Only one farmer made a return of the seed, and one other was so delighted with the enterprise that he made his own shipments to the Northern market, and this year he has a considerable acreage in their culture. With the others the continued frosts killed the young plants, and very few came to maturity.

Sufficient to say, however, the plant assumes an enormous size, and yields abundantly in this soil and climate. As to the character of the seed: one large crusher said that the specimen sent from Sumter County was the finest he ever saw, and that if we could grow beans like the sample sent, he would give a contract for several thousand bushels.

Just at this time, however, the "Wilson bill" took 50 cents duty off castor beans per bushel, and the West Indies up to date has "outclassed" our section.

From meager observations, however, I am sure that, if sufficiently understood and extensively cultivated, we have the advantage of that now rebellious district, even as it is.

One thing we must understand thoroughly, and that is their cultivation. All depends upon the knowledge of it. A few facts are given, gathered from the St. Louis market, which will be of great benefit to those who expect to engage in the enterprise in this locality.

Almost any soil that will produce wheat or corn will answer for the castor bean. When it can be had, a sandy loam is preferable. The soil should be dry. Wet, heavy soils are not adapted to its successful culture.

One important fact in connection with the culture of castor beans is that it is one of the most fertilizing crops raised. In this respect it surpasses even clover. Many farmers say, for fertilizing purposes, a crop raised upon poor land is worth several dollars per acre to the land, on account of the additional fertility gained by it.

The ground should be put in good condition for the seed, as for other crops. One thorough plowing, and three or four harrowings, with a heavy harrow, will be a sufficient preparation.

The ground is now laid off in rows, 5 or 6 feet apart, each way, except that, between every sixth and seventh row, a distance of about 8 feet between the rows is left one way, to admit a horse and wagon or slide to pass, to take the beans when gathered. Hot water, somewhat below the boiling point, should be poured over the seeds, and they should remain in this water twenty-four hours before being planted. The temperature of the water will, of course, be gradually reduced to the temperature of the atmosphere. Applying the hot water once will be sufficient. If planted without this preparation, they are a great while in germinating, many of them not making their appearance for three or four weeks. With this preparation they will soon germinate and come up regularly. Some farmers put in each hill one half of those which have hot water poured over them and one half those which have not; so that if the cut worms destroy the first that come up, a stand may be obtained from the others, which will come up a week or two later. Good, sound,

*Read before the meeting of the Georgia Pharmaceutical Association, Savannah, 1895.—Am. Jour. Pharm.

ENAMELED SARCOPHAGUS.

BRONZE ORNAMENTS FROM THE GRAVES.

BABYLONIAN EXCAVATIONS OF THE EXPEDITION OF THE UNIVERSITY OF PENNSYLVANIA.—FROM PHOTOGRAPHS.

plump seed should be selected for planting. A bushel will plant fifteen to twenty acres. Eight or ten seed should be dropped in each hill. But one or, at most, two plants are to be left in a hill. As the cut worm is quite destructive to the plants, this number of seeds is recommended, so as to be certain of an even stand. Of course, replanting can be done; but it is better to avoid it, if possible, by planting plenty of seed. The seed should be planted as soon as all danger of frost is over. The plants are as easily destroyed by frost as our common bean, and, therefore, planting should be delayed till after the 1st of April.

The cultivation of the plants consists in destroying the weeds and grass, and keeping the soil open and mellow. These objects are chiefly attained by using the horse and cultivator, or small plow, working between the rows both ways. It is also necessary to work among the plants with hoes, going over them two or three times, cutting the weeds away from the plants that cannot be reached with the plow or cultivator, and drawing a little mellow earth to the plants, gradually reducing the number to one plant in the hill, though two are occasionally left. One strong, vigorous plant, however, will produce better seed than two in the same hill, and as great a quantity of beans. After the plant is 2 feet high it is capable of taking care of itself, and grows rapidly. After heavy rains, however, it is still advisable to work between the rows with the horse cultivator, breaking up the crust that has formed on the surface of the ground, and opening and loosening the soil to derive a greater benefit from the atmosphere. It will be seen that the cultivation is as simple as that of corn or of the common bean.

About the first day of July the beans begin to ripen. They are produced in pods or husks, on spikes of various lengths, and should be gathered as soon as the pods begin to turn brown, to prevent loss by their popping out on the field, as beans, when ripe, pop or burst from the pod quite a distance. They are gathered by cutting off the entire spike. Each plant has a number of these, and they are produced and ripen in succession till frost. Of course, only those exhibiting brown pods should be cut. These spikes are then thrown into a wagon or on a slide, passing through the broad rows, and hauled away to the dry yard, which is made on a piece of land near the bean fields, sloping to the south, so as to get as much heat as possible from the sun to ripen the beans and cause them to burst from the husks. Cut off the sod, then roll the ground down hard, and make a fence around the yard by placing boards up against rails laid on crotched sticks or posts; though the fence is not necessary if the yard is made large enough to leave a space outside the beans of 12 or 15 feet, as many of the beans will pop that distance, and if the fence is not built, or the space left, many of the beans will be lost in the grass or field beyond the yard.

The spikes are occasionally turned over and exposed to the sun, until all the seeds have left the husks, when the old spikes are taken away and a new supply added. The same process is gone through with the entire crop. Great care should be taken to prevent the beans getting wet. Dirty beans command much less price, and sprouted beans are nearly worthless. When rain is anticipated, rake the spikes into a heap and cover them with straw, plank or tarpaulins; sweep the beans up, clean them with a fanning mill, and store in a dry place. Do not attempt to pop them out in pops over the fire, as it renders them almost worthless.

It will undoubtedly pay most farmers to make board floors for their "dry yard" their beans on. In this way they can keep the beans perfectly clean and free from lumps of hard dirt and small stones, which cannot be taken out by a fanning mill or screens. Such a floor can be made cheaply in sections, say 8 feet wide and 16 feet long, by nailing rough boards planed on one side to 2x4 scantling set on edges, to allow air and rain to pass underneath. These sections can easily be moved by wagon. In case of rain the unpopped beans can be raked into one or more piles on part of the floor, and the other section used to cover them. When the bean season is over they can be used for other purposes, say storehouse for grain, etc., or shelter for animals, and the next season for dry yard floor, and soon. It will probably pay to paint the floor with cheap black paint; black "draws the sun," which will quicken the "popping out" process. The paint will preserve the wood and also prevent the rain from soaking into the floor, thus enabling the farmer to spread his beans again much sooner after the rain is over. No doubt the extra money received for the castor bean will soon pay the entire cost of the floor.

After the beans begin to ripen, the field should be gone over once or twice a week until frost. In hot, dry weather, they ripen more rapidly than in cool, wet weather. Children can perform this work, and a large family of children cannot be more profitably employed than in taking care of a crop of castor beans. The work is all light. With a steady horse, children might do all the work.

Frosted beans are worth from one-half to two-thirds the price of good beans, but must never be mixed with them when sent to the market, as a very few frosted beans in a lot of good will reduce the value very much, from the inability to separate them economically.

The yield will depend much upon the culture bestowed upon the crop, upon the season, and the care exercised in gathering and ripening the seed. From fifteen to twenty-five bushels to the acre is an average yield. Some cultivators will yield considerably more, others less. Farmers will do well to pay attention to this crop, for which a certain demand exists, and at remunerating cash prices. It will pay better than raising cotton, corn, potatoes, wheat, barley, or almost any other farm produce. It is not a difficult crop to get to market, can be taken by team, or sent by railroad, and more profit than most crops, as the value is greater for the same quantity.

Castor beans have proved a profitable crop. Present market price is \$1.25 per bushel.

These directions for the cultivation of castor beans are intended to apply to our latitude. It is thought they are sufficiently explicit to enable any one to successfully attempt their culture.

We wish again to urge the farmers and dealers to thoroughly clean their castor beans before shipping to market. Well cleaned beans will always bring more,

and it is a disadvantage to all but the railroad company to pay the freight on dirt, chaff and hulls.

Castor beans weigh 46 pounds per bushel. The principal markets for us are New York City and St. Louis. The freight rate per 100 pounds in bags or barrels is 79 cents.

There are fixed charges for inspecting castor beans in bulk, as follows: two dollars (\$2.00) for every bulk car or part bulk car; two (2) cents per sack for every car sacks; three (3) cents per sack on less than carload lots, and that no inspection be less than twenty-five (25) cents.

GRADES OF CASTOR BEANS.

Prime beans are such as are bright and uninjured, and weigh not less than forty-one (41) pounds to the measured bushel when cleaned.

Number 2 beans are such as are bright and uninjured by rain, weigh not less than thirty-eight (38) pounds to the measured bushel when cleaned, and shall be valued at five (5) percent. less than the value of prime beans.

Rejected beans are such as are slightly damaged by rain, and weigh not less than thirty-eight (38) pounds to the measured bushel when cleaned.

No grade beans are such as are badly damaged by rains or damaged by frost, or weigh less than thirty-eight (38) pounds to the measured bushel when cleaned.

Americus, Ga.

ANGULOA UNIFLORA, VAR.

FLOWERS of a beautiful variety of *Anguloa* were shown at the meeting of the Royal Horticultural Society, at St. Albans, recently. The plant was provisionally named *alba magna*, but it turns out to be a

ANGULOA UNIFLORA, VAR.—CREAMY WHITE, WITH PINK SPOTTING.

variety of *A. uniflora*. The flower is of a creamy white, minutely spotted with pink.—The Gardeners' Chronicle.

LIVING BAROMETERS.

AMONG recent advances in weather lore, one branch of this subject has received but scant attention. There is a widespread belief in the delicate powers possessed by some animals and plants of predicting the approach of weather changes. It is even said that in some cases these natural barometers seem to be more sensitive than the meteorological instruments in ordinary use. Nor could it be wondered at if the instinct, which the lower animals have acquired throughout long periods of natural selection, of foretelling the coming of the storm that robs them of their food or destroys their home and young, should prove more unerring than the more laborious observations of man.

The power of adaptation to circumstances, which man alone enjoys to its full extent, has rendered it unnecessary that he should know by intuition what the weather of the next few hours may be. But with the lower animals the case is altogether different. Defenseless as they are against the ravages of the storm, and powerless to combat the fury of the elements, it is often to them a matter of life or death should their instinct fail to warn them of approaching danger. This gift has no doubt been an important factor in determining the survival of the fittest. It has given its possessors an advantage over their less fortunate competitors.

The gift may, however, be less mysterious than it at first sight appears. The president of the Royal Meteorological Society, in a long discourse on "Weather Fallacies," printed in the society's Quarterly Journal this year, while not affirming that all indications derived as to the future from plants and animals are fallacious, practically asserted that most of those examined by scientific experts had broken down. The actions relied on as indications of future changes indi-

cate directly only what the animals at that moment feel, not what they feel is coming. If they act in a special way before rain comes, that is simply, he believes, because they feel uneasy by reason of actual chilliness or dampness; but in fact such dampness may precede still wetter weather. So with plants. They act in accordance with the weather conditions actually prevailing—conditions which, in many cases, precede greater changes, so that valuable hints may be derived from these sources.

The restlessness of domestic animals on the approach of rainy weather has given rise to many a well worn household proverb. Cats and dogs are given to scratching and other uneasy movements, while their fur looks less bright and glossy; horses and cattle stretch their necks and sniff the air; sheep become frolicsome, or turn their backs to the wind, with frequent quarrels; goats bleat incessantly, and leave the hill tops for more sheltered spots; pigs run uneasily about, carrying straw to the sty, and no longer wallow in the mud and mire; fowls huddle together in the farmyard, with drooping wings, and the air is filled with the cackle of geese and ducks. When Louis X, astonished at the remarkable accuracy of the charcoal burner's weather predictions, curiously asked the cause, he learned that the real prophet was the man's donkey, which always hung his ears forward and rubbed his back against the wall on the approach of rain.

But although domestic animals are undoubtedly sensitive to changes, present or coming, in the weather, it is among the wilder creatures that we find this power in its fullest extent. Moles become more active in digging; stoats and weasels become unusually restless and uneasy; rats and mice run noisily about in the house walls; and the hedgehog fortifies his cave against the coming storm with an unfailing prevision which has earned for this strange little animal quite a reputation among weather prophets.

Wild birds suffer much from inclement seasons, and might therefore be expected to have an unusually delicate perception of unfavorable atmospheric conditions. In addition to the accurate knowledge of the change of seasons which is indispensable to habits of migration, keen sensitiveness to weather conditions is abundantly shown in the daily habits of birds, both large and small. Rooks and swallows, instead of taking their customary distant flight, remain near home when a tempest is brewing; seagulls no longer venture out to sea, but hover over the fields or fly inland when wind and rain are near; swallows and martins fly low and skim the water; herons seem doubtful where to rest; and the robin broods, melancholy, in the bush, or seeks the shelter of a neighboring roof. Stormy petrels have long established their claim to consideration by mariners as weather guides, owing to their invariable habit of collecting in the wake of ships before a storm. There are some, however, who ascribe this behavior of Mother Carey's chickens rather to the superstitious imagination of sailors than to the weather wisdom of the bird itself.

Even aquatic animals are alleged to be affected by the approach of atmospheric changes. It is said that porpoises and dolphins swim to windward on the approach of rough weather, and sailors look with misgivings upon the sports and gambols of these unwieldy creatures as they circle round their ships when the sea is calm. The variable prospects of the angler according to height of the barometer is in itself sufficient proof of the effect of the weather upon the inhabitants of our lakes and rivers. It is an interesting fact that the earliest suggestion of storm warnings for our coasts was that of Dr. Merryweather, at the great exhibition of 1851, where he showed a living barometer, consisting of bottled leeches, which rang little bells by an ingenious contrivance when a storm was at hand. His proposal to establish a system of leech barometers at our principal seaport towns was never carried into effect, and sounds somewhat ludicrous at the present day. The president of the Meteorological Society evidently expects us to find it difficult to believe that the scheme was propounded seriously. Yet there appears to be a good foundation in fact for the connection between the weather and the behavior of the leech. When placed in a bottle partly filled with water, a leech is said to remain coiled up at the bottom before the coming of fine, cold weather; but it rises to the top of the bottle, sticking on the glass above the level of the water, when it is going to rain. It is said to become restless on the approach of electrical disturbances.

A similar use was commonly made of frogs in Germany and Switzerland. A small green variety was kept in a glass vessel half full of water, into which a miniature ladder descended. The frog sat high and dry upon the steps in expectation of cold and wet, but remained in the water when there was a promise of sunshine. Reptiles, also, which remain torpid during the winter have this weather sensitiveness in a marked degree. Eastern superstition has even endowed snakes with power over wind and rain.

In the insect world, two similar instincts seem to exist. The "rain beetle" of Bedfordshire, a long-bodied member of the large family of beetles, has acquired its name from the supposed association of its appearance with the coming of wet weather. That a bee was never caught in a shower is a familiar belief arising from the habit which this insect has acquired of remaining at home when unfavorable weather is threatening. Ants, wasps, and spiders exhibit the most watchful anxiety for the approach of inclement seasons, and in the disposition of their nests, eggs or webs they utilize to the utmost their acquired faculty of guarding against wind and rain. Indolence in spiders is believed to be a certain sign of bad weather, for they seldom change their web, unless it is going to be fine, and they make the frame lines of their webs unusually short, to meet the resistance of a rising wind.

Such precautionary instincts and prophetic powers as animals possess are, as has already been stated, the natural outcome of a necessity for self-preservation. In the case of plant life, although provisions for the safety and dispersion of the species are equally necessary, we do not find this protective power against bad weather to so marked an extent. There is also a difference between the habits of plants and the instinct of animals. But certain plants are capable of giving weather indications of considerable accuracy and value.

The pink eyed pimpernel, the "poor man's weather glass," as it is often called, is so sensitive to atmospheric