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### Wafer Flowers.



FIG. 1.

The art of making artificial flowers out of sealing wafers is spreading in French homes, especially amongst the young people. Fig. 1 will give some idea of these productions, and Fig. 2 of how they are made. A penknife, a pair of scissors, a pair of pincers, and fine iron wire, such as florists use, and a box of coloured wafers and a fine sponge, are the means required. A disc of card is cut from a carte de visite, by laying a coin on

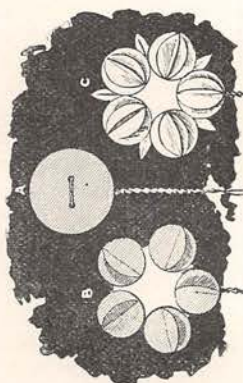
it and cutting round the edge of the coin. Two holes are bored in the disc, and the wire, after being threaded through them, is twisted into an artificial stem, as shown at A in Fig. 2. A yellow wafer is now fixed on the centre of the disc, and five red ones round about it. On these last five white half wafers are placed vertically, as shown at B; and other half wafers of rose colour are fixed between the red and white, at an angle of 45°, as shown at C. Ferns, grasses, and other ornaments can be interspersed with the flowers to make a presentable bouquet.

### A Transparent Cement.

A clear cement for glass, which will neither crack nor permit the formation of arborescent marks, is made by procuring the oldest Canada balsam, and warming it to drive away the essential oil, then dropping into it a very little, not too much, castor oil.

### Artists in the Far North.

Lieutenant von Payer, who with the late Lieutenant Weyprecht conducted the well-known Austro-Hungarian expedition towards the North Pole, has conceived another scheme of Arctic exploration, which is to be carried out next year. On this occasion his object is not so much to discover new territory and make scientific observations, though these objects will not be overlooked, as to obtain a series of pictures of Arctic scenery made on the spot. He believes that only in this way can justice be done to the weird and fascinating beauty of the polar landscapes, with their delicate effects of atmosphere, light and snow. Pictures made by artists at home, even by those who have visited the frozen north, are, according to him, very imperfect, and convey a false impression of the reality. Count Wilczka has provided the necessary funds for the expedition, which will consist of a small steamer of 400 tons, and proceed towards the Pole by way of East Greenland. The party will winter in a suitable fjord there, and advance northwards in the following year. Lieutenant von Payer has become an artist in order to carry out his idea; but he will be accompanied by a band of artists who will make studies on the spot, and work them into pictures whilst the impressions are fresh on their minds. For this purpose portable studios will be taken, so that the artists can ply their brushes under shelter and in comparative comfort. The colours will be mixed with an oil which does not freeze at very low temperatures, and Lieutenant von Payer expects to bring back a



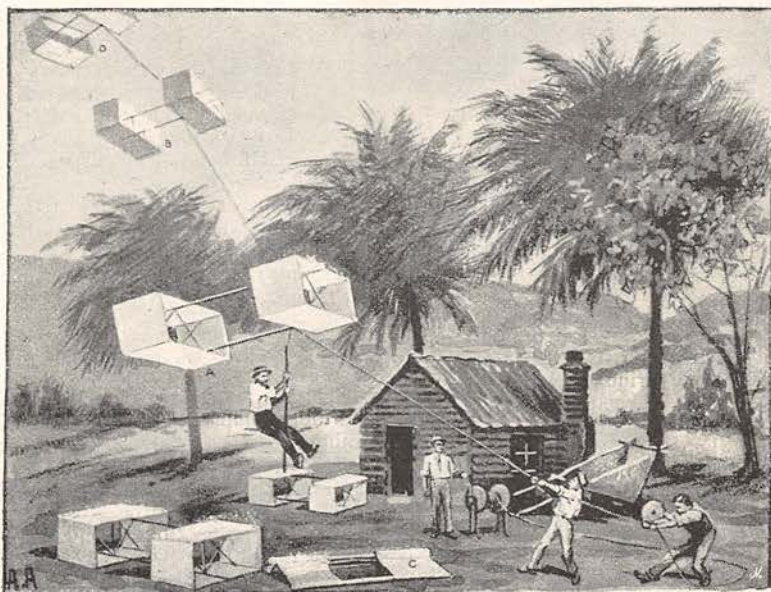
WAFER FLOWERS.—FIG. 2.

gallery of Arctic landscapes, and scenes of Eskimo life throughout the year, which will be an acquisition to the civilised world.

#### Flying by Kite.

Mr. Hargrave, of Clifton, New South Wales, the inventor of a flying machine, has been trying experiments with kites as a means of lifting bodies and of travelling through the air. In the illustration, for which we are indebted to *Engineering*, A, B, D are three cellular kites made of calico and American redwood, and so built as to collapse easily for transport as shown at C. Four of these kites—A, B, D, and E (which is not shown in the

Spencer, of the Horn Scientific Expedition, in Central Australia, have now come to hand. The animal proves to be the *Phrictis-Crassipes* of the tribe *Perritelariæ*, to which belongs the *Mygale Stridulans* of Mr. Wood Mason, which also has a stridulating organ. It reaches a length of two and a half inches, and has a span of five inches across the legs. Its home is a burrow in the ground about one inch in diameter and terminating in a cell at a depth of nearly two feet. Judging from the shards found in its chamber, it appears to live mainly on beetles. The whistling or booming sound is evoked by a curious little apparatus in the shape of a comb of hard matter on a joint of the palp, which when moved up and down grates



FLYING BY KITE.

picture)—were flown by Mr. Hargrave on an ordinary clothes line at a distance of 40 to 50 feet apart, and weighed 35 lbs. in all. With a wind blowing at a velocity of about 19 miles an hour, they sustained a weight of 180 lbs. The figure shows Mr. Hargrave, who weighs 166 lbs., entrusting himself to the kites by sitting on a projecting seat attached to the kite E. When all four kites were pulling on the line he was lifted into the air, the pull of the kites being 240 lbs., and the velocity of the wind 21 miles an hour. Mr. Hargrave points out that a group of such kites, propelled by a motor, would make a flying machine, and, in any case, they might be useful in lifting a flying machine into the air without the help of a railway, as in Mr. Maxim's experiments. There is no doubt that a use will be found for such kites, especially as it is easy for the passenger to descend to the ground by pulling in the line.

#### The Whistling Spider.

Particulars of the whistling, or rather booming, spider which was discovered by Mr. Baldwin

against rows of spines on the chelicera. The note thus produced can be heard a distance of six or eight feet.

#### Life and Sunshine.

Dr. C. Hart Merriam, an American naturalist, has made a study of the distribution of animal and vegetable life, and finds that it is chiefly governed by temperature. The northward distribution of species is apparently restricted by the total quantity of sunshine, or rather heat, which they receive during the period of their growth and reproduction. The southward distribution, on the other hand, is not governed by this condition, but by the mean temperature during the hottest part of the year, in other words, by the maximum of heat, to which they are exposed for a time. In some districts of the Pacific Slope of North America, an anomalous intermingling of northern and southern types of plants and animals has been observed, and according to Dr. Merriam this is explicable by the foregoing consideration, inasmuch as there is a high total of sunshine in these parts combined with a



A NEW GRAPNEL.

comparatively low summer temperature. Obviously, persons who cannot endure extremes of heat and cold, but require a great deal of sunshine throughout the year, might find a suitable climate on the Pacific coast.

#### A New Grapnel.

The grapnel which we illustrate is intended for hooking hawsers or submarine cables at the bottom of the sea. As will be seen, the teeth project beyond a conical shield not unlike the extinguisher of a candle but when they catch in a rock or the sea mud they bend back behind the shield until the obstruction is cleared. On the other hand, if the rope or cable is caught in the hook A it is held fast, and the grapnel is then raised to the surface of the water.

#### Preserving Butter.

Butter when exposed to the air for a time becomes rancid—that is to say, acid, with a disagreeable odour, due to saponification of the glycerides and volatile acids. The rancidity is caused by the chemical action of oxygen in presence of light on the fatty matter, and by the action of micro-organisms—that is to say, microbes and cryptograms, which saponify and ferment the butter. In France it is usual to preserve butter by salting it with 4 to 8 per cent. of its weight of fine white powdered salt. In England and Scotland a powder consisting of two parts of salt, one part of saltpetre, and one part of sugar, is employed instead of pure salt. Butter is also preserved by means of chemicals, such as tartaric acid, bicarbonate of ammonia, boric and salicylic acids, but they tend to spoil the delicate flavour of the butter. The action of the air on butter is also prevented by exhausting it and sealing the can airtight, or replacing the air by carbonic acid under pressure, or enclosing the butter in a metal skin by electrolysis after the manner of electroplating. A novel method, which promises to supplant these, to a large extent at least, has just been introduced by M. A. M. Villon, a Frenchman, who preserves milk by means of

compressed oxygen. Oxygen is unsuitable for preserving butter, but chrysoleine—a colourless liquid, slightly soluble in water—is found to serve the purpose. The butter is treated with a solution of five parts of chrysoleine in 100 parts of water, and formed into lumps, which are placed in the can shown in the figure. The lid of the can, B, is then closed and fastened by the lever, C. It is airtight, but by means of two stopcocks, E, F, chrysoleine solution is let into the can while the air escapes. When the can is filled up with the solution the butter will keep for months, even in warm weather, and it only requires to be washed in fresh water to be fit for the table.

#### Trees and Weather.

M. Mer, a French forester, has observed that weather affects the growth of trees as it does that of vegetables. During the dry summer of 1893, for example, the firs of the Vosges Mountains in France grew less than usual, both in height and girth. A similar effect was produced by the cold wet summer of 1888. The dry spring of 1892 checked the growth in height, and the dry autumn of 1887 the growth in girth. In short, there are good, bad, and middling years of growth according to the nature of the weather.

#### "A King's Diary."

This is the first of a new series of handy and portable volumes to be known as "Cassell's Pocket Library." Its author is Mr. Percy White, who presents, in this little booklet, a story at once striking and quite out of the ordinary run. Its personal tone gives the story a certain individuality, and its pathetic ending—which in weak hands might have been morbid rather than artistic—gives it an added interest. The shape of the volume and its strong binding makes it very suitable for carrying in the pocket.



PRESERVING BUTTER.

### An Explosive Fruit.

Our illustration shows a dried fruit from Batavia, Java, which has the curious property of exploding when it is placed in water. The fruit is nearly an inch long, and shaped like a cigar. After floating on the water for a few moments, it suddenly bursts and scatters the seeds which it contains in all directions. It grows on a plant, the *Justicia*, belonging to the Acanthaceæ family, and when it ripens it opens with a noise and sheds some of its grains; but the effect is greatly enhanced by water, which further moistens a kind of gum on the outside of the seeds and makes them adhere to what they strike. There are other fruits and nuts which have this peculiar method of scattering the seeds inside them, notably the Balsamines, several kinds of bean and Cucurbitaceæ, and also the *Hura Crepitans* of the Euphorbiaceæ family.



AN EXPLOSIVE FRUIT.

### Up To Date.

With the eighth volume, which has just been published, the Jubilee edition of "Cassell's Illustrated History of England" is completed. From time to time we have noticed in these pages the separate volumes of the work as they were issued. Everything that we have said regarding these portions of the work applies with added force now that it is a finished whole. How important and useful a feature the illustrations to this edition are may be realised from the fact that they number nearly fifteen hundred, and include portraits and sketches made by some of the foremost of present day illustrators. The thoroughness with which the literary portion of the work has been brought up to date may be seen in the final pages, which include a summary of the speeches at the opening of the present Session of Parliament, and record the result of an election which took place in February last. These eight volumes cannot fail to be of the greatest assistance to all who are engaged in educational work, and are equally well-fitted to serve as books of reference for the general reader.

### A Neglected Period.

It would be hard to give any sufficient reason for the fact—but fact it is—that in the great majority of teaching institutions English history is practically brought to a close at the Revolution or the accession of Queen Anne. Of course, some attention is given to the eighteenth century; but, considering the indelible mark which this period has left upon our policy even to the present day, it cannot be looked upon as having received anything like adequate treatment save at the hands of specialists whose work has always been addressed to a limited circle of readers. In "Britain and Her Rivals, 1713-1789" (A. D. Innes and Co.) Mr. Arthur D. Innes endeavours to remedy this defect, and to provide, within the moderate compass of a single volume, a history of the period, which shall be within the grasp of the average reader and student. One great lesson which he draws from the period under review is that of the importance of the preservation of our sea power, of which we have heard so much in other quarters of late, and its value and effect upon the policy of this country during the last century, which can hardly be over-estimated. The growth of our Indian and Colonial empires, and the causes which led to the loss of the United States, as well as the firm establishment of the Cabinet system in our government, are all admirably sketched in a work which, though unambitious, cannot fail to be of real service, and which appeals alike to teacher and taught, to the politician and the University Extension student.

### GARDENING IN MAY.

WE are now on the threshold of summer. The earlier roses commence to show blossom towards the end of the month, though they are later this year through the severe and prolonged frost in February, and in a few weeks the garden will be filled with the colour and perfume of true summer flowers. May is a month of preparation for the summer. Towards the end of the month get all half-hardy things, as "geraniums," lobelias, and such like, into the open, as it is well to accustom them to open-air life before they are planted permanently. Make good use of tuberous begonias and the newer cactus dahlias, so beautiful is the form and subtle colouring of the bold flowers thrown up above the ample foliage as if to show how proud and exquisite is their aspect. Thin out annuals, and mow the lawn every week. Much, of course, will depend upon the weather: as, if very hot, less mowing is required than if it be moist. Hyacinths, tulips, daffodils, and other spring flowering bulbs should be lifted after blossoming, but not until the leafage has decayed. Then store them, when dry, in boxes, which should be kept in a cool place. In the following early October they may be planted out again, selecting September, however, for the daffodils.

Keep the soil gently stirred about carnations and picotees, supporting the flower stems with a neat stick towards the end of the month.

As regards the vegetable garden, there is less to be done than amongst the flowers. Prick out celery, sow French beans, peas, onions, turnips, lettuce, and endive, whilst everyone should try and