GIGANTIC FLOWERS.

Certain localities seem particularly adapted for the development of both animals and plants, and in the region including India, the islands of the Indian Archipelago, and outlying Australia, certain forms of the latter are found that in the size of their fruit and flowers excite the greatest wonder in those who have beheld them, and not a little credulity in those who have not been so fortunate.

In the southern continent of our own hemisphere is found the great lily *Victoria regia*, that created the sensation of the time when discovered, and a picture recently shown in these columns, representing a boy and girl standing upon one of the leaves, gives a forcible idea of the strength of structure of this giant.

The *Victoria regia*, however, is dwarfed by several flowers that have since been discovered, and, indeed, in South America there are one or two that equal, if not exceed it. The figure in the accompanying illustration conveys something of an idea of the size and dimensions of a gigantic arum, the most wonderful discovery in plant life in recent times. It was found by Beccari in Sumatra, and the plant, which has been named *Amorphophallus titanum*, has an ally in northern countries in the little "wake robin" common in English hedgerows.

The latter is a most attractive little plant, presenting a tuft of rich glossy leaves out of the center of which rises the flower, or more properly aggregation of flowers, for it is a family or group of them, collected about the base of an erect and club-shaped pillar, or column, known as the spadix, that in turn is protected by an envelope or sheath, all growing from an extremely small tuber.

Curiously enough, in the olden times, it was not the flower that was appreciated, but the starch that was obtained from the tuber, being used in the time of Queen Elizabeth for starching the ruffles that characterized the apparel of the court gallants.

The Sumatra arum is a wake robin of mammoth proportions, and it is said that the first European that observed it at first refused to believe that it was a flower. This was before the time of Beccari, who brought the plant before the scientific world. A party was traveliug through Sumatra with native guides, when one of the latter brought into camp a huge object of evidently vegetable structure, at least six feet in length, and endeavored to make the white men believe that it was a flower, or part of one. The story, however, was not credited, and was forgotten until the real discovery was made by the Italian botanist mentioned. He found the plant growing in secluded parts of the country, and considered it to be a most remarkable example of vegetable growth.

Imagine, if you can, a tuber five feet, and sometimes more, in circumference; from this growing leaves on foot stalks ten feet in length, divided and torn by the wind, yet covering an area of forty-five or fifty feet in circumference. Above this towered the gigantic flower, impressing the beholder not only with it size, but by its peculiar coloring. The central column or spadix, that in the wake robin is used as a button hole bouquet, is in this tropical cousin six feet in height and proportionately stout.

The spadix from which this rose was about three feet in diameter, of a bell shape, the edges richly crumpled and toothed in a fantastic manner, and colored a pale greenish tint upon the inside and a rich, black metallic purple without.

A group of these plants would present a remarkable sight, their enormous leaves, the large masses of color, and the huge waving central column resembling more the creatures of some vivid imagination than the reality.

If we consider diameter, the discovery of Sir Stamford Raffles in the same country is indeed a greater marvel. The plant now known as the *Rafflesia arnoldi* is an enormous parasite, uncouth and fleshy, seemingly attaining its huge dimensions by literally absorbing the juices of its neighbors. It is invariably found growing upon the roots of other plants, leafless, rootless itself, represented only by the gigantic flower, from which rises an odor sickening and fetid in the extreme.

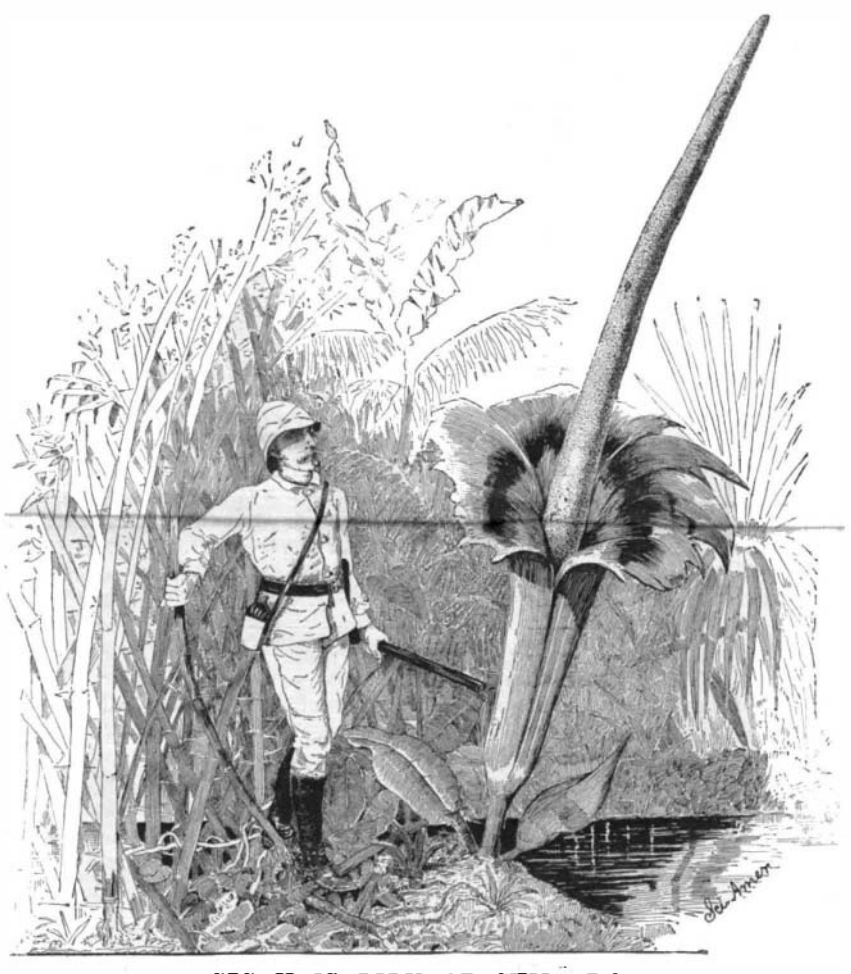
The plant first observed was considered an enormous fungus or agaric, but it was soon shown to be a flower. Imagine a rose blasted and swollen, weighing fifteen or twenty pounds, its petals reduced to five in number, the thickness of each being over an inch, each one measuring a foot from the base to the apex, and some idea can be gained of this monstrosity of plants. It measured over three feet across the surface, and the nectary, a vessel capable of holding six quarts, was filled with a reeking fluid that gave out an odor like tainted beef, and was a trap, containing the bodies of myriads of insect victims.

The flower was first discovered on the Manna River, Sumatra, where it is known as the "Devil's Siri Box," and is calculated to create a decided impression on the mind of the observer. Dr. Arnold, after whom it is also named, says of the effect it had upon him when coming suddenly upon it."

"To tell the truth, had I been alone, and had there been no witnesses, I should, I think, have been fearful of mentioning the dimensions of this flower, so much does it exceed every flower that I have ever seen or heard of."

In the island of Java another of these giants has been found, differing but little specifically, and being nearly as large as its Sumatra ally.

In the South American jungles are found many flowers remarkable for their extreme size. On the Magdalena River there grows a climbing aristolochia that attracts the voyager to the shore by the wonderful size and structure of its blossoms, each one of which measures four feet in circumference. The specific name is *Grandiflora*, and it is probably similar to what is known as the "pelican plant" in the West Indies, where the blossom so resembles a pelican's head. The great flowers are often used by the native children as caps, being quite large and stout enough for the purpose. Miers, who observed them in Brazil, says that as they appeared hanging upon the vines, he was reminded of colored handkerchiefs spread out to dry.



GIGANTIC LILY OF SUMATRA.

None but a native would think of approaching near them, much less utilizing them as head gear, as the odor is so fetid as to drive away large animals from their near proximity.

Not only this, but they are poisonous when eaten. Tussac is authority for the statement that an entire herd of swine that had eaten the roots and leaves were destroyed.

A species of this plant, *A. Goldieana*, found on the Old Calabar River and Sierra Leone, is quite as remarkable. The flower is over two feet in length, and eleven inches in diameter at the mouth. It has all the richness of coloring and disagreeable qualities of odor that characterize its ally of the South American continent.

Our familiar night blooming cereus may well be grouped with the phenomenal plants, having a flower that, when fully expanded, measures a foot in diameter. Exceeding this in beauty and size is the *Lilium giganteum*, that constitutes one of the most gorgeous displays in the floral kingdom. This is represented at the museum at Kew by a stem that was over a foot in circumference at the base, and that rose to twice the height of the tallest man, or nearly fourteen feet, and was covered with blossoms, each as large as a large goblet.

The delicate ferns that are the types of grace and beauty in our woods have gigantic representatives in other countries. That known as the "Silver King" (*Cyathea dealbata*) has leaves seven feet in length. This may be considered its normal size, but in the silent forests of New Zealand the delicate fern assumes at once the proportions of a tree, and is met with with leaves forty-two feet in length. Yet these were probably insignificant when compared to their ancestors in the past ages of the world's history.

Origin of the Cereals.

Recent numbers of *Naturen* contain interesting papers, by Prof. Schubeler, on the original habitat of some of the cereals, and the subsequent cultivation in the Scandinavian lands and Iceland of barley and rye more especially. It would appear that barley was cultivated before other cereals in Scandinavia, and that the generic term "corn" was applied among Northmen to this grain only from the oldest times, and that in the Norwegian laws of the seventeenth and eighteenth centuries, wherever reference was made to the "*Kornskat*"—or standard by which land in the Northern lands was, and still is, rated in accordance with the corn it is capable of yielding—the term was understood to apply to barley. Proof of the high latitude to which the cultivation was carried in early ages is afforded by the Egil's Saga, where mention is made of a barn in Helgeland (65° N. lat.) used for the storing of corn, and which was so large that tables could be spread within it for the entertainment of 800 guests. In Iceland barley was cultivated from the time of its colonization, in 870, till the middle of the fourteenth century, or, according to Jon Storrason, as lately as 1400.

From that period down to our own times barley has not been grown in Iceland with any systematic attention, the islanders being dependent on the home country for their supplies of corn. In the last century, however, various attempts were made both by the Danish government and private individuals to obtain home-grown corn in Iceland, and the success with which these endeavors were attended gives additional importance to the systematic undertaking, which has been set on foot by Dr. Schubeler and others, within the last three years, for the introduction into the island of the hardier cereals, vegetables, and fruits. As many as 382 samples of seeds of ornamental and useful plants, most of which were collected from the neighborhood of Christiania, are now being cultivated at Reykjavik under the special direction of the local government doctor, Herr Schierbeck, who succeeded, in 1883, in cutting barley ninety-eight days after the sowing of the seed, which had come from Alten (70° N. lat.). And here it may be observed that this seems the polar limit in Norway for anything like good barley crops. The seed is generally sown at the end of May, and in favorable seasons it may be cut at the end of August; the growth of the stalk being often 2½ inches in twenty-four hours. North of 60° or 61° barley cannot be successfully grown in Norway at more than from 1,800 to 2,000 feet above the sea level. In Sweden the polar limit is about 68° or 66°, but even there, as in Finland, night frosts prove very destructive to the young barley.

In some of the field valleys of Norway, on the other hand, barley may, in favorable seasons, be cut eight or nine weeks after its sowing, and thus two crops may be reaped in one summer. According even to a tradition current in Thelemarken, a farm there owes its name, *Triset*, to the *three* crops reaped in the land in one year!

Rye early came into use as a breadstuff in Scandinavia, and in 1490 the Norwegian Council of State issued an ordinance making it obligatory on every peasant to lay down a certain proportion of his land in rye. In Norway the polar limit of summer rye is about 69°, and that of winter rye about 61°; but in Sweden it has been carried along the coast as far north as 65°. The summer rye crops are generally sown and fit for cutting about the same time as barley, although occasionally, in southern Norway, less than ninety days are required for their full maturity.—*Nature*.

Violin Making.

In a recent issue of the SCIENTIFIC AMERICAN some one asked for names of works on "Violin Making." An esteemed correspondent gives the following authors: Otto on the "Construction of the Violin," etc., Davidson on the "Violin," two very interesting works, the latter being much the more practical.

The first three volumes of *Amateur Work*, published by Ward, Lock & Co., London, England, have the most complete articles, theoretical and practical, ever published. They are written by a pupil of Chanot, one of London's best makers. Some splendid violins have been made from the directions given. To the above may be added "Construction of the Violin," by H. P. Smith. All the above works may be ordered through the SCIENTIFIC AMERICAN Office.

On a Few Remarkable Statues.

The conception of monumental work seems to be characteristic of a certain degree of advancement in the civilization of peoples. The ancients erected many immense works in honor of their divinities. With them the majesty of a god often seemed to depend upon the size of his image; but the latter always sought to express power and majesty. The most imposing statues were given to the most powerful and dreaded gods.

In ancient Egypt colossi formed an essential decoration of the great temples and palaces. They were represented in a calm and uniform attitude, either seated or standing, the bust straight, the legs close together, the arms close to the body, and the hands extended upon the thighs or resting upon the knees.

All details that were judged useless were suppressed without consideration in order to bring into prominence the simplicity of the lines and the extent of the surfaces. The style was sober, broad, and severe, and if the statues represented individuals, it was man already stripped of his terrestrial character and arrived at the divine state.

Aside from its great pyramids, its 100 foot high obelisk, its gigantic tombs, and its innumerable and enormous sphinxes, Egypt was covered with statues 160 feet in height, carved out of a single block of stone.

Herodotus mentions a colossus of Osiris which was 93 feet in height. A few years ago there was exhumed at Memphis a granite statue of Ramses II., which must have been 49 feet in height. Before the entrance to the palace of Luxor there were seated four similar colossi 40 feet in height. Near Gournah there are still to be seen the fragments of a gigantic statue of Ramses the Great, represented seated. It was cut from a single piece of rose granite, and must have been 57 feet in height and have weighed more than 2,000,000 pounds.

Finally, we may cite the two colossi of Memnon, which, although seated, each measured more than 62 feet in height, and, with their pedestal, had a weight of more than 2,800,000 pounds.

The Egyptians employed stone almost exclusively, although they were acquainted with the art of casting and working bronze.

The Greeks likewise erected many statues to their divinities, which were in most cases of bronze, or covered with plates of gold and ivory. Their most celebrated sculptors adopted the colossal type. The Minerva of Phidias was 37 feet in height. In reality it was a wooden statue supported by an internal trussing of iron, and covered with golden plates *repousse* with the hammer and chased, and with plates of finely carved ivory. It was so accurately fitted together that it was impossible to detect the joints.

The celebrated Jupiter Olympius of the same sculptor was likewise of gold and ivory. The god was represented seated, and was 40 feet in height.

Phidias also constructed several colossal Minervas, one of which, the Athena of Promachos, was 50 or 60 feet in height.

The famous colossus of Rhodes, the work of Chares of Lindus, was erected 300 years before Christ, in honor of Apollo. It was of bronze, and passed for one of the seven wonders of the world. Its feet rested upon the two moles which formed the entrance to the harbor, and ships passed full sail between its legs. It was 105 feet in height, and everything in equal proportion, and few could clasp around its thumb. It took 12 years to make it. A winding staircase ran to the top, from which could easily be discerned the shores of Syria and the ships that sailed on the coast of Egypt, by the help of glasses which were hung on the statue's neck. Notwithstanding that it was ballasted with stones to secure stability, it was partly destroyed by an earthquake B. C. 224. Its remains are said to have been sold A. D. 672 by the Saracens, who were masters of the island, to a Jewish merchant of Edessa, who loaded 900 camels with the metal, whose value had been estimated at what would be represented in United States money by $180,000.

Rome, especially under the empire, erected many colossal bronze statues, representing in most cases Cæsars that had been deified even while living. That of Nero by Zenodorus was 110 feet in height.

In Japan there is a brass statue of Buddha, represented seated, which is 50 feet in height. In India and China most of the gigantic idols are of masonry or of roughly carved wood.

In the middle ages there were the Saint Christophers that were erected at the entrance to many churches, and the great statues of Roland.

In modern times colossal statues have generally been constructed only when the distance from the point of view rendered it necessary to increase the proportions. Several celebrated artists have often felt the need of joining material grandeur to that of expression.

In the first rank of these stands Michael Angelo, of whose work we shall cite only his David, in marble, more than 16 feet in height, his bronze statue of Julius II., three times the size of life, and his Moses—the *chef d'œuvre* of modern sculpture.

At Villa Pratolino, near Florence, there is a much admired stone statue of Jupiter Pluvius, 70 feet in height, from the chisel of Jean de Bologne.

Almost all the most recent colossal statues have been cast in bronze. We may cite the following:

The equestrian statue of Peter the Great by Falconet (1766), at St. Petersburg. The figure of the Czar is 12 feet and the horse 18 feet in height. The entire group weighs 39,600 pounds.

The statue of Bavaria, inaugurated in 1850, near Zurich. This is 52 feet in height and weighs 1,560 hundredweight. The plaster model was divided into 15 pieces for moulding in bronze, and this latter operation took about six years.

The Virgin of the Puy, a work of the sculptor Bonassieux, inaugurated in 1860. The height of this is 52 feet, and its weight 220,000 pounds.

Finally, the colossal statue of Arminius, inaugurated in 1875 upon the summit of the Grotenburg, near Detmold, Westphalia. The height of this is about 65 feet, not including the sword, which measures nearly 25 feet. The weight of the whole is 237 hundredweight.

The most remarkable example of the use of *repousse* work in colossal statuary is certainly the St. Charles Borromeo of the sculptor Cerani, which was erected in 1697 near Arona. In its construction this statue much resembles Bartholdi's Liberty; so it merits particular mention. Its height is 76 feet, or, including the pedestal, 115 feet. The length of the arm is 30 feet, that of the nose 33 inches, and that of the forefinger 6 feet.

The statue is of *repousse* copper supported, through iron cramps and trussing, by internal masonry which is nearly tangent to the copper shell, and which rises as far as to the neck. The copper plates are but 0·06 inch thick. They did not have to be hammered over patterns, but directly by hand. These plates are quite boldly joined by large rivets 1·6 inches apart. They are connected directly with the masonry by means of eye bolts and hooks. The right arm, which is nearly horizontal, is supported by a large oak beam, of 14 x 15 inches section, sealed into the masonry, and provided with flat irons, like the yard of a ship. This beam is supported by rods sealed into the masonry. The wood is now rotten, and will have to be replaced. The left hand, which holds a book, is supported by three iron rods suspended from a beam that is sealed into the masonry.

The statue is entered through an aperture hidden under a fold in the alb, and which is reached by a ladder. The ascent is very difficult.

As regards other recently constructed statues of hammered copper, we hardly need cite any but the one erected at Alise-Sainte-Reine in honor of Vercingetorix, the heroic defender of the Gauls. Its height is 23 feet. —*Abstract from Le Genie Civil.*

Hot Weather Diet.

A new publication called *The Cook*, which is supposed to be good authority in all cuisine matters, says that housekeeping presents more varied difficulties to the young housekeeper in summer than at any other season of the year. It is the season when heavy joints should be eschewed, and light, tempting viands, arranged in neat, appetizing form, served in their stead.

Summer menus are much more difficult to arrange than others, as our systems demand cooling viands. There is nothing more acceptable than cold meats, such as cold roast lamb, cold roast squabs and chickens, and among cold vegetables, cold asparagus. These if neatly arranged on the dishes and prettily garnished, if with nothing other than a few fruit blossoms, will please the eye and more easily tempt the palate. Salads present an endless array of good cheer during summer, and are most acceptable. A liberal diet of fresh, thoroughly ripe fruit is of the highest importance to most of us, but care must be exercised not to eat too heartily of it at any one meal. Vast quantities of liquids should be avoided when fruit has been eaten.

At no season of the year is it more important to have good, reliable servants than in summer. If they condescend to remain in the city, it is with reluctance and an increase of salary. The summer presents to them visions of sea beaches, green fields, and flirtations, not to be cast aside without strong financial inducements, and even then they feel and act like caged birds struggling to be free. Consequently watchfulness greater than at other times must be exercised, to see that they do not neglect the proper care that food should receive at this season. Viands of all kinds should be purchased from day to day, and delivered early in the morning or after sundown. When this is not possible, one should have a good sized ice box capable of holding a good supply of ice. It should be so arranged that milk, butter, etc., are separated from meats and vegetables. When huddled together, they lose their identity, so far as their individual flavors are concerned, and become tainted with the flavor of one another. This is particularly true of milk and butter, which rapidly absorb impure or obnoxious flavors. Cleanliness is nowhere more important than in the ice box, which should be thoroughly scrubbed at least twice a week.

Milk is a very important summer diet, but should be used in moderation, or it is liable to produce ill effects. Drink it in small mouthfuls, and rest a moment between them. Dyspeptic persons are advised to beat the milk a few moments before drinking. This treatment breaks the butter globules, and renders digestion easier. We strongly recommend skimmed milk and fresh buttermilk as summer drinks instead of ice water. The ice water dyspepsia, a common malady during the summer months, may be entirely relieved by using small quantities of freshly churned buttermilk accompanied by what is known as a moderately dry diet.

Breakfast should not be a heavy meal, and hot food should be used in moderation. Hot tea and coffee liberally partaken of prevent one from feeling comfortable all day. Radishes ice cold, oatmeal crackers and milk, a dainty slice of cold lamb, fresh fruit, and cold asparagus, presents a breakfast menu that makes hot weather a luxury.

British Naval Guns.

The Woolwich correspondent of the London *Times* writes: The new guns which have been designed to maintain the naval supremacy of Great Britain are in an advanced state, but they have to undergo a course of experiments to settle the range tables and other particulars, and it will probably be the beginning of next year before they are ready for sea. This will, however, be earlier than the ships which are to carry them can be completed, and there will be ample time available for a full and leisurely study of their requirements and capabilities.

The first of the four 63 ton steel breech loaders for Her Majesty's ship Rodney will be shortly finished, and will be used as an experimental gun, care being taken that it is not damaged in the process by any of the surgical operations to which experimental guns are occasionally subjected. Although 17 tons lighter than the 80 ton muzzle loaders on board the Inflexible, the 63 ton gun is expected to surpass the older weapon in its destructive power. It will probably throw a 13¼ inch shot, of 1,250 lb. weight, with a powder charge of about 580 lb., and the estimated velocity at the muzzle is to be 2,100 feet per second. The 80 ton gun projectile weighs 1,700 lb., but the cartridge is but 450 lb., and the muzzle velocity recorded is 1,600 feet per second. Should the new gun realize expectations, it will penetrate 29 inches of wrought iron armor at close quarters, and prove too much for 27 inches even at the liberal fighting range of 1,000 yards.

Still more powerful, but not in the same ratio of increase, will be the 110 guns now being manufactured for Her Majesty's ship Benbow. There are three of these guns ordered, one of which will be surrendered for the purpose of scientific experiment, while the other two are sent on board ship, where, however, they will not be wanted until the midsummer of 1886. The projectile will be 16¼ inches diameter, and weigh 1,800 or 2,000 lb. The powder charge will be the enormous one of 900 lb., or half the weight of the projectile, supposing this to be 1,800 lb., on which supposition the velocity may be reckoned at 2,050 feet per second, and its power of penetrating armor at 31½ inches near the muzzle, or 2 inches less at 1,000 yards. The new guns will be greatly superior to the Italian 100 ton guns, which are at present at the head of all the naval artillery in the world, and they are also in advance of the 100 ton guns which are doing duty for England on the fortifications of Malta and Gibraltar, although these are larger in the bore by 1½ inches. The substitution of steel for wrought iron admits of heavier charges of powder, and this fact makes all the difference. Two huge sleighs for the proof trials of these and similar guns are being built—the one for use at Woolwich and the other for Shoeburyness, whither both the experimental guns just mentioned will sent for practice at the sea ranges. To Shoeburyness there is also to be immediately sent the 80 ton gun which has been returned to Woolwich from the Inflexible. The inner tube of the gun is unquestionably cracked, but this is regarded as a comparatively small injury, and before it is repaired the gun will be fired with a series of heavy charges at the targets which have been put up at Shoeburyness to represent the Spithead forts. These targets, which are respectively faced with granite, wrought iron plates, and compound steel, have already been attacked in a course of earlier experiments, and the compound steel has shown to very great advantage. The double barge Magog will, as heretofore, convey the 80 ton gun, but for the 110 ton gun a still larger craft is being built, which is to be called the Gog, and measures 20 feet longer than the Magog.

SOMEBODY has said, what everybody has observed, that those persons who have attained to eminence in any vocation of life have followed a uniform course, that of earnest work and unwearied application. None are truly happy but those that are busy; for the only real happiness lies in useful work of some kind, either of the hand or the head, so long as overexertion of either is avoided. It should be the aim of every one to be employed. If all men and women were kept at some useful employment, there would be less sorrow and wickedness in the world.