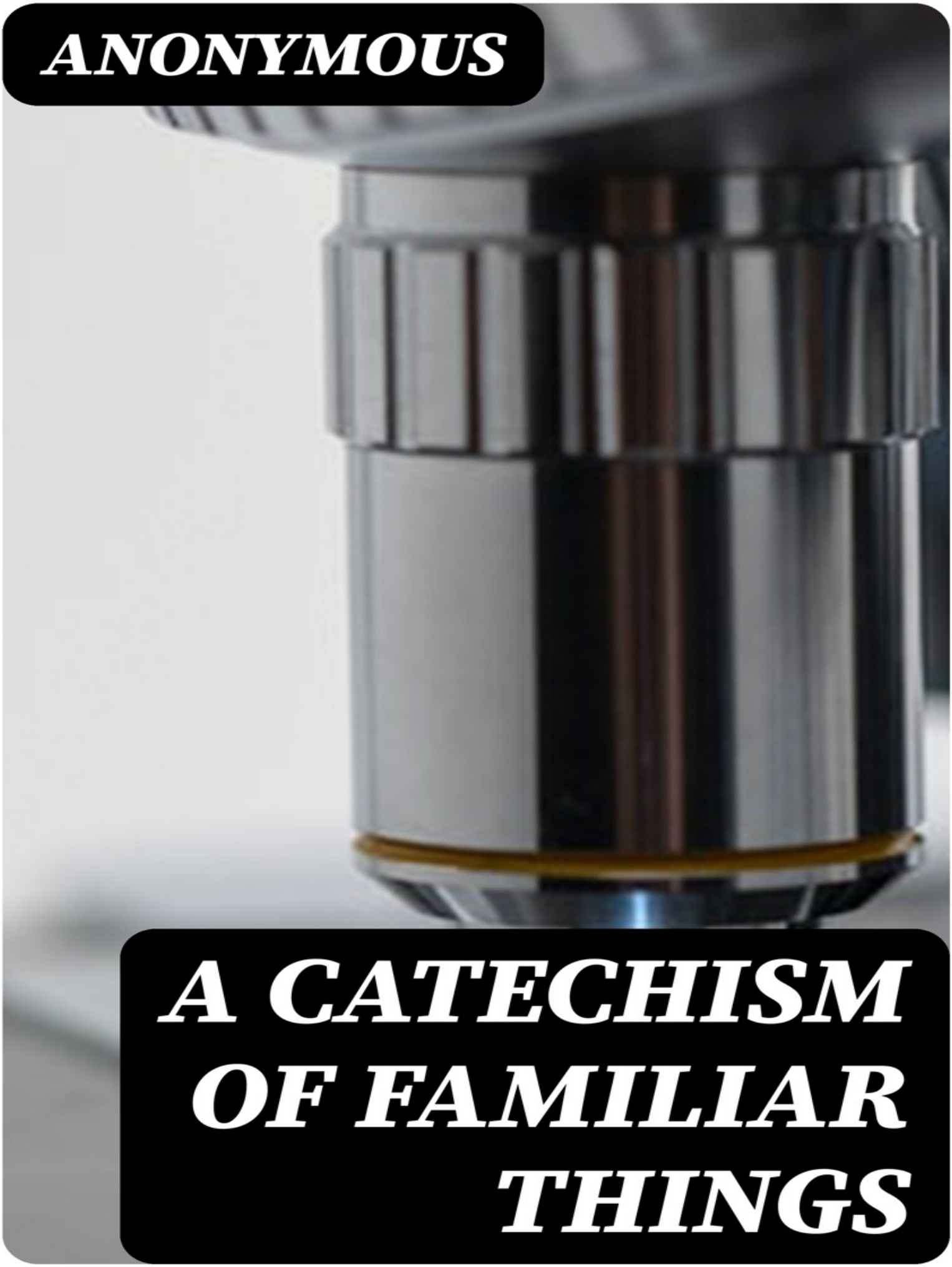

ANONYMOUS

A CATECHISM OF FAMILIAR THINGS

Anonymous

A Catechism of Familiar Things

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PRINTERS TO THE HOLY APOSTOLIC SEE.

PREFACE.

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This book, a reprint of a successful English publication, has been so enlarged as to be to all intents and purposes new. It has been carefully revised by a Reverend gentleman, who for some time filled the chair of Physics and Chemistry in one of our colleges.

Recent inventions and improvements are described in a simple, popular style, so as to be easily understood by all, and short notices are given of prominent inventors and scientists. The paragraphs relating to doctrinal matters conform in every respect to the teachings of the Church.

A feature which will commend the book to every teacher is the definitions of difficult words and terms, following the paragraphs in which such words occur.

Technical language is avoided as much as possible, so as to enable young pupils to become familiarly acquainted with the various phenomena of nature, the leading characteristics and general history of the objects of the animal, vegetable, and mineral kingdoms, and the fundamental truths of the arts and sciences.

The illustrations are of a superior order, and a very complete Index, which will be appreciated by every teacher, supplements the book. In a word, no pains have been spared to enhance the value of the work, and render it an

important auxiliary in the dissemination of useful and entertaining knowledge.

The publishers beg to acknowledge their obligations to the Sisters of Mercy, Loretto, Pa., to whose kindness they are indebted for many valuable suggestions.

In the hope that the book may be found suited to the accomplishment of its aim, it is respectfully submitted to schools and instructors of youth, who are the best judges of its merits.

A CATECHISM OF FAMILIAR THINGS.

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CHAPTER I.

Table of Contents

Dew, Water, Rain, Snow, Hail, Atmosphere, Wind, Lightning, Thunder, Electricity, Twilight, and the Aurora Borealis.

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What is Dew?

Moisture collected from the atmosphere by the action of cold. During the day, the powerful heat of the sun causes to arise from the earth and water a moist vapor, which, after the sun sinks below the horizon, is condensed by the cold, and falls in the form of dew. Dews are more copious in the Spring and Autumn than at any other season; in warm countries than in cold ones: because of the sudden changes of temperature. Egypt abounds in dews all the summer; for the air being too hot to condense the vapors in the day-time, they never gather into clouds and form rain.

Horizon, the line which bounds the view on all sides, so that the earth and sky appear to meet. A Greek word, from the verb signifying to mark boundaries.

Temperature, degree of heat or cold.

Condense, to cause the particles of a body to approach or unite more closely.

What are its uses?

It cools and refreshes the vegetable creation, and prevents it from being destroyed by the heat of the sun. All hot countries where there is little or no rain are therefore blessed with this provision by the all-bountiful Creator, to render them luxuriant and inhabitable; and the dews which fall are so copious, that the earth is as deeply soaked with them during the night as if a heavy rain had fallen. For this reason also it is, that we so often read in the Bible of the "dew of Heaven" being promised to the Israelites as a signal favor.

Luxuriant, fertile, flourishing.
Signal, remarkable, eminent.

From what does the vapor originate?

Vapor is water, combined with a still greater quantity of caloric,—that is, an imponderable and subtile form of matter, which causes the sensation of heat; and which, driving asunder the particles of the water, renders it aëriform.

Imponderable, without sensible weight.
Subtile, thin, not dense, or compact.
Particle, a small portion of matter.
Aëriform, having the form of air.

What is Water?

The fluid which covers more than three-fifths of the surface of our globe, and which is necessary for the life and health of the animal and vegetable creation; for without water there would be neither rain nor dew, and everything

would perish. It is likewise a necessary beverage for man and the inferior animals.

Beverage, drink, liquor for drinking.

In how many states do we find Water?

In four: 1st, solid, as in ice, snow, hail, &c.; 2d, fluid, as in its common form; 3d, aëriform, as in steam; and 4th, in a state of union with other matter. Its most simple state is that of ice, which is water deprived of a certain portion of its caloric: crystallization then takes place, and the water becomes solid and is called ice.

Crystallization, the process by which the parts of a solid body, separated by solution or fusion, are again brought into the solid form. If the process is slow, the figure assumed is regular and bounded by plane and smooth surfaces.

Solution, the diffusion of a solid through some liquid.

Fusion, melting, or rendering fluid by heat.

From what cause is the Water deprived of its caloric?

From the coldness of the atmosphere: underneath the poles of our globe it is mostly solid; there it is similar to the hardest rocks, and may be cut with a chisel, like stone or marble. This great solidity is occasioned by the low temperature of the surrounding air; and in very cold countries ice may be ground so fine as to be blown away by the wind, and will still be ice.

Poles, the extremities or ends of the axis, an imaginary line, supposed to be drawn through the centre of the earth;

or when applied to the heavens, the two points directly over them.

Is ice the only instance of Water existing in a state of solidity?

No; it is found in a solid state in many minerals, as in marble, &c., and is then called *water of Crystallization*. It is essential, in many cases, to their solidity and transparency.

Essential, necessary.

Transparency, clearness, the power of transmitting light.

Does Nature decompose Water in any of her operations?

Yes: every living vegetable has the power of decomposing water, by a secret process peculiar to itself. Fish, too, and all cold-blooded amphibious animals are gifted with the same power.

Decomposing, separating a mixed body into its several parts.

Amphibious, able to live both in water and out of it.

Of what use is this power to vegetables?

The water which they decompose affords them nourishment for the support of their vital juices, and enables them, by combining the fluid gases which compose it with those of the air and the soil, to form their different products; while the superfluous gas is abundantly given out by their leaves, to refresh the spent air, and render it wholesome for the animals that breathe it.

Vital, belonging to life, necessary to existence.

Superfluous, unnecessary, not wanted.

What is Rain?

The condensed aqueous vapors raised in the atmosphere by the sun and wind, converted into clouds, which fall in rain, snow, hail, or mist: their falling is occasioned by their own weight in a collision produced by contrary currents of wind, from the clouds passing into a colder part of the air, or by electricity. If the vapors are more copious, and rise a little higher, they form a mist or fog, which is visible to the eye; higher still they produce rain. Hence we may account for the changes of the weather: why a cold summer is always a wet one—a warm, a dry one.

Aqueous, watery; consisting of water.

Collision, a striking together, a clash, a meeting.

Electricity, a natural agent existing in all bodies (see page 18).

What seasons are more liable to rain than others?

The Spring and Autumn are generally the most rainy seasons, the vapors *rise* more plentifully in Spring; and in the Autumn, as the sun recedes from us and the cold increases, the vapors, which lingered above us during the summer heats, *fall* more easily.

Recede, to fall back, to retreat.

What is Snow?

Rain congealed by cold in the atmosphere, which causes it to fall to the earth in white flakes. Snow fertilizes the

ground by defending the roots of plants from the intenser cold of the air and the piercing winds.

Congealed, turned by the force of cold from a fluid to a solid state; hardened.

Fertilize, to render fruitful.

Intenser, raised to a higher degree, more powerful.

What is Hail?

Drops of rain frozen in their passage through cold air. Hail assumes various figures according to the degrees of heat or cold through which it passes, being sometimes round, flat, &c.

What is the Atmosphere?

The mass of aëriform fluid which encompasses the earth on all sides: it extends about fifty miles above its surface. Air is the elastic fluid of which it is composed.

Elastic, having the power of springing back, or recovering its former figure after the removal of any external pressure which has altered that figure. When the force which compresses the air is removed, it expands and resumes its former state.

What are the uses of air?

It is necessary to the well-being of man, since without it neither he nor any animal or vegetable could exist. If it were not for atmospheric air, we should be unable to converse with each other; we should know nothing of sound or smell; or of the pleasures which arise from the variegated prospects which surround us: it is to the presence of air and carbonic acid that water owes its agreeable taste. Boiling

deprives it of the greater part of these, and renders it insipid.

Variegated, diversified, changed; adorned with different colors.

Insipid, tasteless.

What is Wind?

Air in motion with any degree of velocity.

What is Lightning?

The effect of electricity in the clouds. A flash of lightning is simply a stream of the electric fluid passing from the clouds to the earth, from the earth to the clouds, or from one cloud to another. Lightning usually strikes the highest and most pointed objects, as high hills, trees, spires, masts of ships, &c.

What is Thunder?

The report which accompanies the electrical union of the clouds: or the echoes of the report between them and the earth. Thunder is caused by a sudden discharge of electrical matter collected in the air, by which vibrations are produced, which give rise to the sound.

What is Electricity?

One of those agents passing through the earth and all substances, without giving any outward signs of its presence, when at rest; yet when active, often producing violent and destructive effects. It is *supposed* to be a highly elastic fluid, capable of moving through matter. Clouds owe their form and existence, probably, to it; and it passes through all substances, but more easily through metals, water, the human body, &c., which are called conductors,

than through air, glass, and silk, which are called *non*-conductors. When bodies are not surrounded with non-conductors, the electricity escapes quickly into the earth.

To what part of bodies is Electricity confined?

To their surfaces, as the outside may be electric, and the inside in a state of neutrality. The heat produced by an electric shock is very powerful, but is only accompanied by light when the fluid is obstructed in its passage. The production and condensation of vapor is a great source of the atmospheric electricity.

Condensation, the act of making any body dense or compact; that is, of bringing its parts into closer union.

In what other sense is the term Electricity employed?

This term is also employed to designate that important branch of knowledge which relates to the properties shown by certain bodies when rubbed against, or otherwise brought in contact with, each other, to attract substances, and emit sparks of fire.

Designate, to point out by some particular token.

Emit, to send forth, to throw out.

CUTTING AND GATHERING ICE, ON THE HUDSON RIVER, NEW YORK.

Whence is the word derived?

From *electron*, the Greek word for amber, a yellow transparent substance, remarkable for its electrical power when rubbed: amber is of a resinous nature, and is collected from the sea-shore, or dug from the earth, in many parts of the world. It is employed in the manufacture of beads and other toys, on account of its transparency; is of some use in medicine, and in the making of varnishes.

Transparent, clear, capable of being seen through.

Resinous, containing resin, a gummy vegetable juice.

Name a few substances possessing this remarkable property.

Silks of all kinds; the hair and fur of animals, paper, sulphur, and some other minerals; most of the precious stones; the paste of which false gems are made; and many other substances used by us in the common affairs of life,

are susceptible of electrical excitement; among domestic animals the cat furnishes a remarkable instance. When dry and warm, the back of almost any full-grown cat (the darker its color the better) can be excited by rubbing it with the hand in the direction of the hair, a process which is accompanied with a slight snapping noise, and in the dark by flashes of pale blue light. When a piece of glass is rubbed with silk, or a stick of red sealing-wax with woollen cloth, each substance acquires the property of attracting and repelling feathers, straws, threads of cotton, and other light substances; the substances just mentioned as highly electric are, however, merely specimens. All objects, without exception, most probably are capable of being electrically excited; but some require more complicated contrivances to produce it than others.

Electric, having the properties of electricity.
Susceptible, disposed to admit easily.
Repelling, the act of driving back.
Complicated, formed by the union of several parts in one.

Is there not a machine by which we are enabled to obtain large supplies of electric power at pleasure?

Yes; the electrical machine. It is made of different forms and sizes: for common purposes those of the simplest form are the best. A common form of the machine consists of a circular plate of glass, which can be turned about a horizontal axis by means of a suitable handle. This plate turns between two supports, and near its upper and lower edges are two pairs of cushions, usually made of leather, stuffed with horse-hair and coated with a mixture of zinc,

tin, and mercury, called an *amalgam*. These cushions are the rubbers for producing friction, and are connected with the earth by means of a metal chain or rod. Two large hollow cylinders of brass with globular ends, each supported by two glass pillars, constitute the reservoir for receiving the electricity. They are called the *prime conductors*, and are supplied with U-shaped rods of metal, furnished with points along their sides, called *combs*, for the purpose of receiving the electricity from the glass plate, the arms of the U being held upon either side. The other ends of the conductors are connected by a rod from the middle of which projects another rod terminating in a knob, for delivering the spark.

On turning the plate, a faint snapping sound is heard, and when the room is darkened, a spark is seen to be thrown out from the knob projecting from the *prime conductors*.

Many curious and interesting experiments may be performed by means of the machine, illustrating the general properties of electricity. For instance: a person standing on an insulated bench, that is, a bench with glass legs, or having the legs resting on glass, and having one hand on the conductor, can send sparks, with the other hand, to everything and everybody about. This illustrates communication of electricity by contact. A wooden head, covered with long hairs, when placed on the conductor, illustrates electrical repulsion, by the hairs standing on end.

If the hand is held to the knob, sparks will pass from it in rapid succession, causing in the hand a sensation of pain. This is called an *electric shock*, and is caused by the electric fluid occasioning a sudden motion by the contraction of the

muscles through which it passes. The force of the shock is in proportion to the power of the machine.

What are the Muscles?

Bundles of thin fleshy fibres, or threads, fastened to the bones of animals, the contraction and expansion of which move the bones or perform the organic functions of life.

Organic, relating to organs or natural instruments by which some process is carried on.

Functions, employments or offices of any part of the body.

Contraction, drawing in or shortening.

Expansion, extending or spreading out.

What is Twilight?

The light from the first dawning of day to the rising of the sun; and again between its setting and the last remains of day. Without twilight, the sun's light would appear at its rising, and disappear at its setting, instantaneously; and we should experience a sudden transition from the brightest sunshine to the profoundest obscurity. The duration of twilight is different in different climates; and in the same places it varies at different periods of the year.

Instantaneously, done in an instant, in a moment's time.

Obscurity, darkness, want of light.

How is it produced?

By the sun's refraction—that is, the variation of the rays of light from their direct course, occasioned by the difference of density in the atmosphere.

Variation, change.
Density, closeness of parts, compactness.

What is the poetical name for the morning Twilight?

Aurora, the goddess of the morning, and harbinger of the rising sun: whom poets and artists represent as drawn by white horses in a rose-colored chariot, unfolding with her rosy fingers the portals of the East, pouring reviving dew upon the earth, and re-animating plants and flowers.

Harbinger, a forerunner.
Portals, gates, doors of entrance.
Reanimating, invigorating with new life.

What remarkable phenomenon is afforded to the inhabitants of the polar regions?

The Aurora Borealis, or Northern Lights, a luminous appearance in the northern parts of the heavens, seen mostly during winter, or in frosty weather, and clear evenings; it assumes a variety of forms and hues, especially in the polar regions, where it appears in its perfection, and proves a great solace to the inhabitants amidst the gloom of their long winter's night, which lasts from one to six months, while the summer's day which succeeds it lasts in like manner for the same period of time.

Of what nature is the Aurora Borealis?

It is decidedly an electrical phenomenon which takes place in the higher regions of the atmosphere. It is somehow connected with the magnetic poles of the earth; and generally appears in form of a luminous arch, from east to west, but never from north to south.

Phenomenon, an extraordinary appearance. The word is from a Greek one, signifying, to show or appear.

Magnetic, belonging to the magnet, or loadstone.

Luminous, bright, shining.

In what country is it seen constantly from October to Christmas?

In Siberia, where it is remarkably bright. On the western coast of Hudson's Bay, the sun no sooner disappears, than the Aurora Borealis diffuses a thousand different lights and colors with such dazzling beauty, that even the full moon cannot eclipse it.

CHAPTER II.

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Corn, Barley, Pearl Barley, Oats, Rye, Potatoes, Tea, Coffee, and Chocolate.

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What is Corn?

Corn signifies a race of plants which produce grain in an ear or head, fit for bread, the food of man; or the grain or seed of the plant, separated from the ear.

What is generally meant by Corn?

In this country, maize, or Indian corn, is generally meant; but, in a more comprehensive sense, the term is applied to several other kinds of grain, such as wheat, rye, barley, oats, &c.

Where was Corn first used?

It is uncertain. The Athenians pretend that it was amongst them it was first used; the Cretans, Sicilians, and Egyptians also lay claim to the same. From the accounts in the Bible, we find that its culture engaged a large share of the attention of the ancient Hebrews.

Culture, growth, cultivation. *Hebrews*, the children of Israel, the Jews

Who were the Athenians?

Inhabitants of Athens, the capital city of Greece.

Who were the Cretans?

The inhabitants of Crete, an island of the Archipelago.

Who were the Sicilians?

Inhabitants of Sicily, the largest island of the Mediterranean Sea, now a part of Italy, and separated from the mainland by the Strait of Messina.

Where do the Egyptians dwell?

In Egypt, a country of Africa. It is extremely fertile, producing great quantities of corn. In ancient times it was called the dry nurse of Rome and Italy, from its furnishing with corn a considerable part of the Roman Empire; and we are informed, both from sacred and profane history, that it was anciently the most fertile in corn of all countries of the world. The corn of Syria has always been very superior, and by many classed above that of Egypt.

For what is Barley generally used?

It is very extensively used for making malt, from which are prepared beer, ale, porter, &c.; in Scotland it is a common ingredient in broths, for which reason its consumption is very considerable, barley broth being a dish very frequent there.

Ingredient, a separate part of a body consisting of different materials.

What is Pearl Barley?

Barley freed from the husk by a mill.

What are Oats?

A valuable grain, serving as food for horses. Oats are also eaten by the inhabitants of many countries, after being ground into meal and made into oat cakes. Oatmeal also forms a wholesome drink for invalids, by steeping it in boiling water.

What are the uses of Rye?

In this and some other countries it is much used for bread, either alone or mixed with wheat; in England principally as food for cattle, especially for sheep and lambs, when other food is scarce in winter. Rye yields a strong spirit when distilled.

Distilled, subjected to distillation—the operation of extracting spirit from a substance by evaporation and condensation.

Of what country is the Potato a native?

Potatoes grew wild in Peru, a country of South America; whence they were transplanted to other parts of the American continent, and afterwards to Europe. The honor of introducing this useful vegetable into England is divided between Sir Francis Drake, in 1580, and Sir Walter Raleigh, in 1586, some ascribing it to the former, and others to the latter. It is certain they were obtained from Virginia in the time of Raleigh; they were cultivated only in the gardens of the nobility, and were reckoned a great delicacy. They now constitute a principal article of food in most of the countries of Europe and America; in Ireland, they have long furnished nearly four-fifths of the entire food of the people.

What part of the plant is eaten?

The root, which, when roasted or boiled, affords a wholesome and agreeable meal.

What is Tea?

The leaves of an evergreen shrub, a native of China and Japan, in which countries alone it is extensively cultivated for use. The tea-plant was at one time introduced into South

Carolina, where its culture appears to have been attended with but little success. It may yet become a staple production of some portions of the United States.

Evergreen, retaining its leaves fresh and green through all seasons.

How is it prepared for use?

By carefully gathering the leaves, one by one, while they are yet small, young, and juicy. They are then spread on large flat iron pans, and placed over small furnaces, when they are constantly shifted by the hand till they become too hot to be borne.

What is next done?

They are then removed with a kind of shovel resembling a fan, and poured on mats, whence they are taken in small quantities, and rolled in the palm of the hand always in one direction, until they cool and retain the curl.

How often is this operation repeated?

Two or three times, the furnace each time being made less hot. The tea is then placed in the store-houses, or packed in chests, and sent to most of the countries in Europe and America.

Describe the appearance of the Tea-tree.

The Tea-tree when arrived at its full growth, which it does in about seven years, is about a man's height; the green leaves are narrow, and jagged all round; the flower resembles that of the wild rose, but is smaller. The shrub loves to grow in valleys, at the foot of mountains, and on the banks of rivers where it enjoys a southern exposure to the sun; though it endures considerable variation of heat

and cold, as it flourishes in the northern clime of Pekin, where the winter is often severe; and also about Canton, where the heat is sometimes very great. The best tea, however, grows in a temperate climate, the country about Nankin producing better tea than either Pekin or Canton, between which two places it is situated.

What produces the difference between Green and Bohea, or Black?

There are varieties of the plant, and the difference of the tea arises from the mode of preparation.

What nation first introduced it into Europe?

The Dutch in 1610; it was introduced into England in 1650

What is Coffee?

The berry of the coffee-tree, a native of Arabia. The coffee-tree is an evergreen, and makes a beautiful appearance at all times of the year, but especially when in flower, and when the berries are red, which is usually during the winter. It is also cultivated in Persia, the East Indies, Liberia on the coast of Africa, the West Indies, Brazil and other parts of South America, as well as in most tropical climates.

Tropical, being within the tropics, that is, in the Torrid Zone.

Who was the original discoverer of Coffee, for the drink of man?

It is not exactly known: the earliest written accounts of the use of Coffee are by Arabian writers in the 15th century; it appears that in the city of Aden it became, in the latter

half of that century, a very popular drink, first with lawyers, studious persons, and those whose occupation required wakefulness at night, and soon after, with all classes. Its use gradually extended to other cities, and to those on the eastern shores of the Mediterranean. Towards the end of the seventeenth century, it was carried to Batavia where it was soon extensively planted, and at last young trees were sent to the botanical garden at Amsterdam.

Who introduced it into France and England?

Thevenot, the traveller, brought it into France, and a Greek servant named Pasqua (taken to England by Mr. Daniel Edwards, a Turkey merchant, in 1652, to make his coffee,) first set up the profession of coffee-man, and introduced the drink among the English.

How is it prepared?

The berries are roasted in a revolving metallic cylinder, till they are of a deep brown color, and then ground to powder, and boiled.

Metallic, consisting of metal.

What is Chocolate?

A kind of cake or paste, made of the kernel of the cacao-nut.

Describe the Cacao-nut Tree.

It resembles the cherry tree, and grows to the height of fifteen or sixteen feet. The cacao-nut tree bears leaves, flowers, and fruit, all the year through.

Where does it grow?

In tropical regions, where it is largely cultivated.

Of what form is the fruit?

It is somewhat like a cucumber, about three inches round, and of a yellowish red color. It contains from ten to forty seeds, each covered with a little rind, of a violet color; when this is stripped off, the kernel, of which they make the chocolate, is visible.

How do they make it into a drink?

By boiling it with water or milk. There are various newly-invented ways of preparing chocolate, so that it may be made in a few minutes, by only pouring boiling water upon it.

CHAPTER III.

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Calico, Cotton, Cloth, Wool, Baize, Linen, Flax, Hemp, Diaper, Holland, Canvas, and Flannel.

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What is Calico?

A kind of printed cotton cloth, of different colors.

From what place did it take its name?

From Calicut, a city on the coast of Malabar, where it was first made; much is now manufactured in the United States, England, and many other countries.

What is Cotton?

A downy or woolly substance, enclosed in the pod, or seed-vessel, of the cotton-plant. The commercial classification of cotton is determined—1, by cleanliness or freedom from sand, dry leaf, and other impurities; 2, by absence of color; both subject also to character of staple, length, and strength and fineness of fibre. These together determine relative value. There are two general classifications, long-stapled and short-stapled. Of the former the best is the sea island cotton of the United States. The *short staple cotton*, grows in the middle and upper country; the long staple is cultivated in the lower country near the sea, and on the islands near the coasts.

How is it cultivated?

The seeds are sown in ridges made with the plough or hoe; when the plants are mature, the pods open, and the cotton is picked from them.

Where did Cotton anciently grow, and for what was it used?

In Egypt, where it was used by the priests and sacrificers, for a very singular kind of garment worn by them alone.

In what manufacture is it now used?

It is woven into muslins, dimities, cloths, calicoes, &c.; and is also joined with silks and flax, in the composition of other stuffs, and in working with the needle.

How is the Cotton separated from the seed?

By machines called *cotton gins*, of which there are two kinds; the *roller-gin*, and the *saw-gin*. In the former, the cotton, just as gathered from the plant, is drawn between two rollers, placed so closely together as to permit the passage of the cotton, but not of the seeds, which are consequently left behind. In the *saw-gin*, the cotton is placed in a receiver, one side of which consists of a grating of parallel wires, about an eighth of an inch apart; circular saws, revolving on a common axis between these wires, entangle in their teeth the cotton, and draw it from the seeds, which are too large to pass between the wires.

How is it made into Calico, &c.?

The cotton having been separated from the seed, is spun by a machine for the purpose. It is next woven, then dressed, and printed.

What is Cloth?

The word, in its general sense, includes all kinds of stuffs woven in the loom, whether the threads be of wool, cotton,