resemblance to those of Kreuznach in Germany. Some thousands of visitors resort to them every summer, and owing to this circumstance Staraya Russa is better built and better kept than any other town in the government of Novgorod. The inhabitants are supported chiefly by the summer visitors. There is a trade in rye, oats and flax shipped to St Petersburg. The name of Staraya Russa occurs in Russian annals as far back as 1167. It belonged to the republic of Novgorod, and suffered continually in the wars between Russia, Lithuania and Livonia. It was afterwards annexed to Moscow.

**STARA ZAGORA** (Turk. *Eski-Zagra)*, the capital of a depart­ment of Bulgaria, in Eastern Rumelia, on the southern slope of the Karaja Dagh, 70 m. N.W. of Adrianople, with which it is connected by railway. Pop. (1906), 20,647. It is surrounded by vineyards, and has also cloth and carpet manufactures, copper foundries and tanneries. The production of silk and attar of roses is carried on in the district, which contains nume­rous mineral springs. The town having been almost wholly destroyed during the Russo-Turkish War of 1877-78, was rebuilt on a regular plan, with wide and broad streets radiating from a fine central square, where are situated the principal public buildings. During the rebuilding, important Thracian, Roman, Byzantine and Turkish antiquities were discovered.

Stara Zagora, founded probably by the Macedonians, was known to the Romans as Augusta Traiana, but afterwards, to distinguish it from a Macedonian town of this name, it was named Beroe or Berrhoea. By the Turks the name was changed in the 17th century to Eski-Zagra or Eski-Zaara, but after 1878 the Bulgarian name of Stara Zagora came into general use.

**STARBOARD** and **LARBOARD,** nautical terms for the right and left sides respectively of a ship, looking towards the bows. The final part of these is Old English *bord,* board, the side of a ship, now used for a plank of wood. In starboard (O. Eng. *steorbord)* the first part certainly means “ steer,” and “ steering side ” therefore refers to the time when vessels were steered by a paddle or sweep worked from the right side. In Old English the left side of a ship was known as *baecbord,* back board, the side of the vessel to the back of the steersman. This is paralleled in all other Teutonic languages, cf. German *backbord,* and has been adopted in Romanic languages, cf. French *bâbord. Baecbord* did not survive in Middle English, in which its place was taken by *laddeborde* or *lathehorde.* In the 16th century the word takes the forms *lerbord, leerebord* or *larbord,* probably by assimilation to *ster-, steere-,* and *star-bord.* There is much doubt as to the origin of the term and the curious change from *laddebord* to *larboard.* Skeat *(Etym. Dict.)* suggests that these may be two distinct words. the earlier form is usually con­nected with "lade,” to put cargo on board a vessel, the left side being that on which this was usually done, for the ship when in port would lie with her left side against the quay wall, her head pointing to the entrance. If the later form is not due to mere assimilation to starboard, it may contain a word meaning empty (O. Eng. *gelär,* Ger. *leer),* and refer to that side of the vessel where the steersman does not stand. Owing to the similarity in sound between starboard and larboard, the word port is now used for the left side. The substitution of this for the older term was officially ordered in the British navy by an admiralty order of 1844, and in the United States of America by a navy department notice in 1896. The use of port in this sense is much older; it occurs in Manwaring’s *Scaman's Dictionary* (1625-1644). In this usage port may either mean “ harbour ” (Lat. *portus)*, the ship lying with its left side against the port or quay for unloading, or “ opening,” “entrance” (Lat. *porta,* gate), for the cargo to be taken on board; cf. “ porthole.”

**STARCH,’** an organized product of the vegetable kingdom, forming one of the most important and characteristic elements of plant life. It originates within the living vegetable cell through the formative activity of chlorophyll under the in­fluence of light, and is consequently an unfailing characteristic of all plants containing that body. Starch found within leaves and other green parts of plants is assimilated and transformed with great rapidity; accumulations of it are carried as starch- formers, and redeposited as starch in special reservoirs or portions of plants as the period of maturity approaches. In this way the body is found to gorge the stems of certain palms—the sago, &c.—just before these plants begin to form their fruit; it is the principal constituent of the underground organs of biennial and perennial plants, tap-roots, root-stocks, corms, bulbs and tubers; and it is abundantly stored in many fruits and seeds, as in the cereals and pulses, in bananas, bread-fruit, &c. It occurs in minute granules varying in diameter from ∙002 to ∙185 milli­metres; and the granules from different sources have each a distinct microscopic character. Under the microscope these granules are seen to consist of a nucleus or hilum surrounded by layers arranged concentrically or excentrically, and the relations of hilum and layers are the most distinctive features of individual starches (see H. Galt, *Microscopy of the Starches,* 1900). Starch consists of a white or yellowish-white glistening powder. It is only slightly acted on by cold water, but under the influence of heat in water it swells up, forming according to the proportions of starch and water a clouded opalescent paste. The soluble portion is called granulose, and the insoluble starch­cellulose; from the aqueous solution alcohol precipitates soluble starch. Iodine acts on it in water, producing a brilliant blue coloration, this reaction forming a very delicate and character­istic test. The colour disappears on heating, but is recovered when the mixture is cold. Diastase and dilute boiling sulphuric acid convert starch into a form soluble in hot water, whence it passes into a series of easily soluble dextrins, and finally into the condition of the sugars, dextrose and maltose. Chemically, starch is a carbohydrate with the formula (C6H10O5)n, where *n* is four or more.

As an. economic product starch in its separate condition is a most important alimentary substance, the chief pure food starches being arrowroot, sago, tapioca and cornflour. In its combined condition, in cereals, &c., starch is a useful nutritive element. In its other industrial relations starch is used: (1) directly, as a thickening material in calico printing, for the dressing and finishing of many textiles, for laundry purposes, adhesive paste, and powder; and (2) indirectly, for the pre­paration of dextrin and British gum and starch sugar. Indian corn, wheat and rice starch are principally employed for the direct applications; and for the dextrin and starch-sugar manufacture potato starch is almost exclusively selected.

In the preparation of starch the object of the manufacturer is to burst the vegetable cell walls, to liberate the starch granules, and to free them from the other cell contents with which they are associated. When, as in the case of the potato, the associated cell contents, &c., are readily separated by solution and levigation the manufacture is exceedingly simple. Potato starch is prepared principally by carefully washing the potatoes and in a kind of rasping machine reducing them to a fine pulp, which is deposited in water as raw starch. The impurities of this starch—cellulose, albuminoids, fragments of potato, &c.—are separated by washing it in fine sieves, through the meshes of which the pure starch alone passes. The sieves are variously formed, some revolving, others moving horizontally or in such manner as to keep the material in agitation. The starch is then received in tanks, in which it settles, and so separates from the soluble albuminoids and salts of the potatoes. (The waste pulp which passes over the sieve is pressed, dried quickly, and sold as a low-grade cattle food.) The settling of the starch is much retarded by the dissolved albuminoids, and to hasten the separation small quantities of alum or sulphuric acid are employed. Alum coagulates the albumen and to that extent contaminates the starch, while the acid acts on the starch itself and is difficult of neutralization. After the starch has settled, the brown-coloured supernatant liquor is drawn off and the starch again washed either in tanks or in a centrifugal machine. Finally it is dried by spreading it in layers over porous bricks (a process not required in the case of starch washed in a centrifugal machine) and by exposure to the air, after which it still retains a large proportion of water, but is in a condition for making dextrin or starch-sugar. For further drying it is ground to a rough powder, and dried thoroughly in a hot chamber, then reduced to a powder and sifted. Potato starch is also made by a “ rotting ” process, in which potatoes are reduced to a pulp by slicing and are then heaped up till fermentation takes place; 100 lb of potatoes yield 15-16 lb of dry starch.

In dealing with the starches of the cereals, there is greater