

## SNAIL CULTURE IN BURGUNDY.\*

By JACQUES BOYER.

SNAIL culture was practiced by the Romans in the time of the civil war between Cæsar and Pompey. The

Burgundy snails was greatly increased by the establishment of railways. "Père Vallée" had found imitators and the humble snail had permanently won the favor of French epicures.

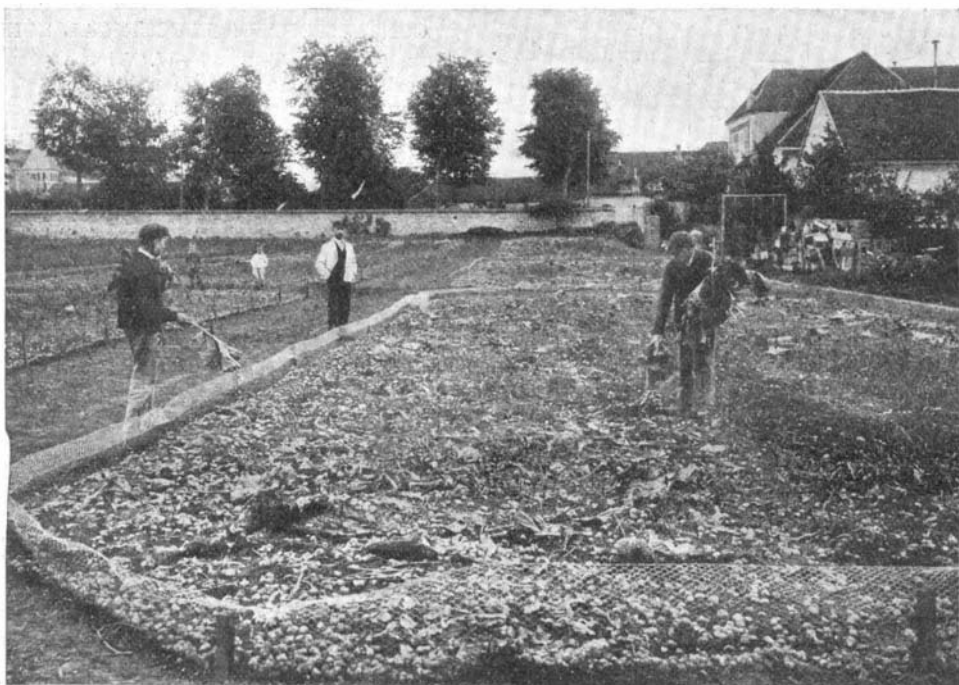
The appearance of the vineyard snail is too familiar

enough to grind leaves, upon which the animal entirely subsists. This vegetarian diet, however, nourishes muscles of astonishing strength. A snail can drag along with ease an object weighing seventy times as much as itself, to which it is attached in the manner of a cupping glass or "sucker," while a horse can draw only twice its own weight.

The snail is very prolific, laying 50 to 60 eggs annually. The eggs, which are globular, gelatinous, and inclosed in exceedingly thin calcareous shells, are deposited, in a cohering mass, in a smooth hole prepared for them in the ground, and hatch in twenty days. The newly hatched snails have very delicate shells, which harden quickly on contact with the air. They grow so rapidly that they are ready for market in October, that is to say, six or eight weeks after hatching. Many of the young snails are destroyed by birds, toads and insects.

In most parts of France snails were formerly gathered in vineyards and hedgerows; now they are bred and fattened in special establishments called *escargotières*, or snaileries. This picturesque industry, however, is two thousand years old, as we have already noted. Columella and Varro have bequeathed us some information of the *cochlearum vivaria* of Rome, which occupied large spaces entirely surrounded by water. Here, on beds of moss and grass, the fortunate mollusks enjoyed a cool and salubrious climate produced by the spray of fountains. The French snaileries of the Yonne, the Lura, the Cote d'Or, the Rhone, and the Aube, and those of Würtemberg, and the Swiss canton of Appenzell are not better managed than their Roman prototypes.

A snail park is made by selecting a plot of damp and calcareous soil and inclosing it with smoothly planed boards, coated with tar, and held in place by outside stakes strong enough to withstand the force of the wind. The boards must penetrate the soil to a depth of eight inches, at least, and at the level of the ground they must have a sort of shoulder, or shelf, to prevent the snails from burrowing under them. When



A SNAILERY AT DANNEMOINE, NEAR TONNERRE, BURGUNDY. FEEDING THE SNAILS WITH LETTUCE, CABBAGE, AND GRASS.

largest snails came from Illyria and the finest from the promontory of Salitum in Africa. Pliny, the elder, ascribes to Fulvius Hirpinus the idea of imprisoning the mollusks in pens and fattening them with a paste composed of flour, boiled wine, and other ingredients, and Petronius informs us that Trimalcion had snails broiled and served on a silver gridiron. During the Middle Ages this picturesque industry became established in Switzerland and the Danubian provinces. At this period, owing to the difficulty of communication, perishable articles of food were seldom brought into the interior of countries. For this reason, according to Dr. Langeron, the suburbs of Ulm sold annually ten million snails to the Austrian convents, where the mollusks were eaten during the rigorous fast of Lent, under the name of fish.

The provinces of Aunis and Saintonge exported snails by the shipload, even to the West Indies, before the French Revolution, but snails did not appear on Parisian tables until a much later date. They came into vogue in the following way: At the end of the eighteenth century travelers who had occasion to visit Burgundy were compelled to stop at the post inns, in several of which snails, gathered in the vineyards, were served to them. Among these inns, one in particular—that of "Père Vallée," at Basson—rapidly acquired the universal esteem of the wine merchants of Paris, who came every year to make their purchases in that district. These merchants very properly extolled the new dish that they had encountered in their travels and so their friends begged them to introduce it into the capital. In consequence, the "Black Hen" and the "Gray Hen"—coaches plying between Paris and Auxerre—were commissioned to bring to the "Ville Lumière" the first baskets of snails that appeared in the Basson market.

In 1830 three Bercy restaurants, the "Marronniers,"

to need minute description. Naturalists class it among gasteropod mollusks and call it *Helix pomatia*.

Like the philosopher of antiquity, it carries its house



PREPARATION OF THE FORCE MEAT WITH WHICH THE SHELLS ARE FILLED.

with it, this house being a nearly flat spiral shell into which the animal withdraws completely when alarmed and in which it passes the winter. The two superior

the mollusk encounters an obstacle in its path it proceeds to lay eggs. According to Larbalétrier, a plot of two hundred square meters is sufficient for ten thousand snails. The ground is plowed deeply, and on a rainy evening in March or April the snails are introduced and covered with from two to four inches of moss or straw, which is sprinkled when it becomes too dry.

Under the influence of heat and moisture the mollusks bury themselves in the ground or take refuge in the bushes until the breeding season. Their food, supplied daily, consists of lettuce, romaine, cabbage, and vine leaves; or, in default of these, grass. But the food must be appetizing, for snails are very fastidious. In consideration of their nocturnal habits it is spread in the snailery shortly before sunset. A few herbs—chervil, mint, parsley, and savory—are planted in the inclosure to improve the flavor of the snails. It was formerly believed that these aromatic herbs attracted the snails, which were supposed to have an exquisitely keen scent. But, according to the recent researches of Young, of Geneva, though snails perceive odors by means of the entire surface of the body outside of the shell, their sense of smell is poorly developed. Young has even proved, by repeated experiments, that the limit of olfactory perception does not exceed sixteen inches. Beyond this distance a snail cannot detect the fragrance of an over-ripe melon—its favorite food—and it sometimes feeds on belladonna, rose laurel, and other poisonous plants. Several cases of poisoning have been caused by eating snails gathered from such plants.

In October the snails, which have become very fat, "cork themselves up," that is to say, they retire within their shells, the mouths of which they close with a thin, calcareous pellicle or epiphragm. Then they are taken from the park and placed on "screens," or trays, which are piled together in great storehouses. Here the snails remain several months without food. In this respect they far surpass the fakirs of India, who, it is



REMOVING THE "CORK," OR EPIPHRAGM FROM THE MOUTH OF THE SHELL.

## SNAIL CULTURE IN BURGUNDY.

the "Penplero" and the "Maison du Grand Saint Louis," received several hundred snails each week, during the season. Twenty years later the trade in

tentacles, or "horns," which adorn its head are longer than the inferior pair and bear organs of vision at their extremities. The mouth contains a very hard, horny tongue and a masticating apparatus powerful

\* From *American Homes and Gardens*. Published by Munn & Co.

fabled, lie buried for weeks. According to the observations of H. Ancapitaine, indeed, snails can fast for two or three years.

When the snail grower judges that the fast has been sufficiently prolonged, or when the winter demand for snails begins the trays are taken down and the snails examined by the women, who reject the dead and remove the "corks," or epiphragms, of the living animals.

Then, after girls have brushed the shells, to remove earthy matter, the snails are placed under a water tap, where a man stirs them with a shovel to facilitate thorough washing.

The snails are then cooked in salt water in a great pot which holds about ten thousand. This operation is performed two or three times a day, according to the demand and the size of the establishment, for the snails, to reach the consumer in good condition, must be cooked and shipped on the same day.

After the cooking comes the "cleaning," which consists in extracting the snail from the shell, drying the latter and refilling it with the meat, reduced to a paste and laid between two layers of unsalted butter, seasoned with finely chopped chervil, shallots, and parsley.

The preparation of the *escargots à la bourguignonne*, or "Burgundy snails," is now finished. All that remains is to pack them in wooden boxes holding 50, 100 or 200, for private consumers, or in larger packages for restaurants, shops and agents at the Halles (the great market of Paris).

In Burgundy the sale of prepared snails extends from the middle of September to the end of April. In the south of France it begins earlier and ends later, and includes a second species of snail, *Helix melanostoma*, which, under the name of *terrassau*, is in great demand at Marseilles and constitutes one of the greatest delicacies of the epicure.

#### HYDRODYNAMICS: ITS EVOLUTION.

THE theory of the equilibrium of liquids, even when



WASHING AND BRUSHING SNAILS.

they are being rotated, was well understood prior to the last century, thanks to Maclaurin (1742), Clairaut (1743), and Lagrange (1788). The generalizations of Jacobi (1834) contributed the triaxial ellipsoid of revolution and the case has been extended to two rotating attracting masses by Poincaré (1885) and Darwin (1887). The astonishing revelations contained in the recent work of Poincaré are particularly noteworthy.

Unlike elastics, theoretical hydrodynamics passed into the nineteenth century in a relatively well-developed state. Both types of the Eulerian equations of motion (1755, 1759) had left the hands of Lagrange (1788) in their present form. In relatively recent times, H. Weber (1868) transformed them in a way combining certain advantages of both, and another transformation was undertaken by Clebsch (1859). Hankel (1861) modified the equation of continuity, and Svanberg and Edlund (1847) the surface conditions.

Helmholtz in his epoch-making paper of 1858 divided the subject into those classes of motion (flow in tubes, streams, jets, waves) for which a velocity potential exists and the vortex motions for which it does not exist. This classification was carried even into higher orders of motion by Craig and by Rowland (1881). For cases with a velocity potential, much progress has been made during the century in the treatment of waves, of discontinuous fluid motion, and in the dynamics of solids suspended in frictionless liquids. Kelland (1844), Scott Russel (1844), and Green (1837) dealt with the motion of progressive waves in relatively shallow vessels, Gerster (1804) and Rankine (1863) with progressive waves in deep water, while Stokes (1846, 1847, 1880), after digesting the contemporaneous advances in hydrodynamics, brought his powerful mind to bear on most of the outstanding difficulties. Kelvin introduced the case of ripples (1871), afterward treated by Rayleigh (1883). The solitary wave of Russel occupied Boussinesq (1872, 1882), Rayleigh (1876), and others; group waves were treated by Reynolds (1877), and Rayleigh (1879). Finally the theory of stationary waves received extended attention in the writings of De St. Venant (1871), Kirchhoff (1879), and Greenhill (1857). Early

experimental guidance was given by the classic researches of C. H. and W. Weber (1825).

The occurrence of discontinuous variation of velocity within the liquid was first fully appreciated by

more than one body. The motion of rings has occupied Kirchhoff (1869), Boltzmann (1871), Kelvin (1871), Bjerknes (1879), and others. The results of C. A. Bjerknes (1868) on the fields of hydrodynamic



COOKING THE SNAILS.

Helmholtz (1868), later by Kirchhoff (1869), Rayleigh (1876), Voigt (1885), and others. It lends itself well to conformal representations.

The motions of solids within a liquid have fascinated many investigators and it is chiefly in connection with this subject that the method of sources and

force surrounding spheres, pulsating or oscillating, in translatory or rotational motion accentuate the remarkable similarity of these fields with the corresponding cases in electricity and magnetism and have been edited in a unique monograph (1900) by his son. In a special category belong certain powerful researches with a practical bearing, such as the modern treatment of ballistics by Greenhill and of the ship propeller of Ressel (1826), summarized by Gerlach (1885, 1886).

The numerous contributions of Kelvin (1888, 1889) in particular have thrown new light on the difficult but exceedingly important question of the stability of fluid motion.

The century, moreover, has extended the working theory of the tides due to Newton (1687) and Laplace (1774), through the labors of Airy, Kelvin, and Darwin.

Finally the forbidding subject of vortex motion was gradually approached more and more fully by Lagrange, Cauchy (1815, 1827), Svanberg (1839), Stokes (1845); but the epoch-making integrations of the differential equations together with singularly clear-cut interpretations of the whole subject are due to Helmholtz (1858). Kelvin (1867, 1883) soon recognized the importance of Helmholtz's work and extended it, and further advance came in particular from J. J. Thomson (1883) and Beltrami (1875). The conditions of stability in vortex motion were considered by Kelvin (1880), Lamb (1878), J. J. Thomson, and others, and the cases of one or more columnar vortices, of cylindrical vortex sheets, of one or more vortex rings simple or linked, have all yielded to treatment.

The indestructibility of vortex motion in a frictionless fluid, its open structure, the occurrence of reciprocal forces, were compared by Kelvin (1867) with the essential properties of the atom. Others, like Fitzgerald in his cobwebbed ether and Hicks (1885) in his vortex sponge, have found in the properties of vortices



CLEANING AND FILLING THE SHELLS.  
SNAIL CULTURE IN BURGUNDY.

Clebsch (1858), generalized by Kirchhoff (1869). Rankine treated the translatory motion of cylinders and ellipsoids in a way bearing on the resistance of ships. Stokes (1843) and Kirchhoff entertain the question of

a clue to the possible structure of the ether. Yet it has not been possible to deduce the principles of dynamics from the vortex hypothesis, neither is the property which typifies the mass of an atom clearly discernible.