transverse or tangential slit separates a dorsal upcurving and enclosing segment from a ventral, on the abaxial face of which a single ovule arises in the median position; and the *Aquilegia-Rubus* type, in which a very narrow radial slit is present between two lateral walls, joined external by a strongly developed dorsal wall which runs up into the stigma. This type gives the follicle which is the basis of the foliar theory of the carpel, but Grégoire points out that the thin radial slit first formed does not agree at all with the concept of two incurving leaf margins joining to give the ventral suture. In the *Aquilegia-Rubus* type this thin slit later expands at its outer margin to give the cavity on which are formed the ovules, few in number but necessarily lateral in position, but in *Papaver*, *Butomus*, etc., the whole surface of the slit is meristematic and active in the production of ovules. Prof. Grégoire shows that perigyny is a natural development of the outer margin of the parenchymatous plinth upon which the reproductive meristem is carried; he thus excludes its interpretation as a concrescence of sepals. He emphasizes that from the new point of view perigynous forms are not to be interpreted as intermediate between epigynous and hypogynous.

The whole paper is a vigorous challenge to classical morphology in a field where there has been much activity in recent years. Prof. Grégoire refused to consider the palæobotanical contributions to this problem and the cupule theory that has thus emerged; but apart from this there is a very full discussion of the bearing of his most recent observations upon the diverse interpretations that have been given to the carpel.

The S.S. *Archimedes*

IN March 1839, the historic little screw-driven vessel S.S. *Archimedes* began her trials in the River Thames. A month or two later she visited Portsmouth, and afterwards made voyages around the coasts of Great Britain and to Holland and Portugal. She was the first vessel to demonstrate effectively the suitability of the screw for ocean-going ships and she ushered in the revolution which led to the abandonment of paddle-wheel propulsion in the ships of both the Royal Navy and the Mercantile Marine.

The *Archimedes* was built of wood at Millwall by Henry Wimshurst (1804–84) for the Ship Propeller Company, a syndicate formed to further the use of the screw-propeller patented by Francis Pettit Smith on May 31, 1836. Smith had previously built a small screw-driven boat of 6 tons bearing his name. The *Archimedes* was 125 ft. long overall, 106 ft. long between perpendiculars, 22½ ft. beam and drew between 9 ft. and 10 ft. of water. Her tonnage was 240 tons. Her machinery consisted of a two-cylinder steam-engine driving the propeller shaft through spur gearing. The cylinders were 37 in. in diameter and 3 ft. stroke. With steam at 6 lb. pressure the engine developed about 80 horse-power. The engine speed was 26 revolutions per minute and the propeller speed 140 revolutions per minute. The first screw fitted was of 7 ft. diameter, 8 ft. pitch and 8 ft. long. This in 1840 was replaced by a double-bladed screw of 5¾ ft. diameter, 10 ft. pitch but of greatly reduced length, but various other screw propellers were also tried. Her machinery was made at Greenwich by J. and G. Rennie. The total cost of the vessel was £10,500.

In accordance with Admiralty instructions early in 1840, Captain E. Chappell, who had been associated with the Steam Packet Service, took command of her and a series of trials were carried out at Dover between the steam packet *Widgeon* and the *Archimedes*. The *Widgeon* was 162 tons and was the fastest boat on the Dover station. The trials were attended by Thomas Lloyd, who afterwards became the first Engineer-in-Chief of the Navy. The joint report of Chappell and Lloyd dated May 2, 1840, was the first official report made to the Admiralty on screw-propulsion. In it it was stated that "it is evident in these vessels the power of the screw is equal, if not superior to that of the ordinary paddle-wheel. In this respect therefore Mr. Smith's invention may be considered completely successful." After some remarks on the noise and wear of the gearing, the teeth of which were of wood, the report went on to say that "It is, however, in propelling vessels of war that the value of Mr. Smith's invention will probably be experienced. . . . A ship fitted with a screw propeller may be used either as a sailing or a steaming vessel, or as both, if required; for we ascertained by experiment that the engine can be connected and disconnected with ease, and in any weather, in two or three minutes. In carrying a press of sail, the inclination of the ship does not diminish the propelling power of the screw nor lessen the ship's way, as with the ordinary paddle-wheel. The getting rid of the paddle-boxes also leaves the broad-side battery altogether clear of obstruction, and in boarding an enemy's vessel would allow of the ships lying close alongside of each other".

Experiments with the *Archimedes* were also carried out at Bristol by Brunel, and it was through these that he was led to adopt screw-propulsion for the famous *Great Britain*, the first screw-driven ship to cross the Atlantic.

University Events

CAMBRIDGE.—The Jacksonian professorship of natural philosophy is vacant. The stipend of the professor is £1,200 a year or, while he holds a fellowship of a college with dividend, £1,000. The professorship is assigned for this turn to experimental atomic physics and will be associated with the Cavendish Laboratory. Candidates are requested to send their names to the Vice-Chancellor on or before April 11, 1939, with twelve copies of any statement or testimonial which they desire to submit to the electors.

The Smith's Prizes have been awarded to T. E. Easterfield, of Clare College and H. N. V. Temperley, of King's College; and Rayleigh Prizes to J. Corner, of Peterhouse, D. S. Evans, of King's College, R. A. Rankin, of Clare College and D. B. Schultz, of Magdalene College.

ST. ANDREWS.—Prof. E. Finlay Freundlich, formerly professor in the German University, Prague, has been appointed Napier lecturer in astronomy and director of the new Astronomical Observatory in the United College, St. Andrews. The lectureship owes its institution to a bequest made to the University by the late Miss Scott Lang, daughter of Sir Peter Scott Lang, formerly professor of mathematics in the United College. It was the desire of Sir Peter Scott Lang that the lectureship should bear the name of Napier of Merchiston, one of the early students of the University.