the point where some of Grew's claims may be challenged, it is only because Grew himself supplied the initial observational data and made them amenable to further research. Up to his time many of the structures were unknown and no vocabulary of paradigms existed in terms of which they could be explained. Despite the severe limitations of equipment and terminology, Grew succeeded in establishing the conceptual framework of classical plant anatomy. That is, he insisted upon experimental methods and, secondly, that such methods be extended to a comparative study of similar structures in different plant forms. Even more important than the establishment of comparative plant anatomy, however, was his ability to follow the logic of his own argument. By his introduction of time as one of the variables of biological inquiry, the static "form" gave way to the several parts or organs of a living thing; with the birth of developmental studies, modern biology was in the offing.

His many accomplishments were consolidated by his mastery of techniques. Through such microscopic techniques as sectioning and illumination, the primary units of plant anatomy were shifted to the cellular structure of tissues and organs. His verbal dexterity was no less a helpful technique. The sparkling, image-laden, sometimes earthy vocabulary, made visualization instantaneous. Even in the more schematic plates, or those with imperfect lettering, the viewer sees no more and no less than what Grew saw. In short, the experimental and microscopic study of plants was placed on a level where Grew's successors could begin the process of confirmation and refinement.

The outstanding instance of confirmation — the function of pollen and the sexuality of plants — is discussed in detail by Zirkle (introduction, pp. xiv–xvi). It would take us too far afield to record the technical refinements; but, by way of example, Plates 44 and 45 may be compared to similar quasi-mathematical abstractions in the writings of D'Arcy Thompson, Arber, and Sinnott on morphogenesis.

Zirkle's introduction, the best short study of Grew available, and the original "Index of the Chief Matters" (printed following p. 304) provide a rough guide to the abundance of material contained in the densely printed folio pages. The chemistry of pigments and color tests, solubility and miscibility of liquids, the ejection of spores from the sporangium, capillary action, and measuring devices, even a possible reference to the fluorescence of chlorophyll, provide a sample of Grew's data.

The present volume is a reprint of the first edition of Grew's collected botanical studies. Some had been published in book form as early as 1672; others (the seven lectures appearing as the last part of Book IV) are printed for the first time. Because Grew revised his material for the 1682 edition, it will now be possible to estimate his progress in the intervening years. But whatever the verdict be, Grew's fame and the impetus he gave to botany are inseparably united.

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A. P. Juškevič; E. Winter (Editors and Intro.). *Leonhard Euler und Christian Goldbach Briefwechsel 1729–1764*. (Abhandlungen der Deutschen Akademie der Wissenschaften zu Berlin. Jahrgang 1965. Nr. 1.) 420 pp., biog. register. Berlin: Akademie Verlag, 1965.

In May 1727 the twenty-year-old Leonhard Euler arrived in Petersburg to take up his duties at the newly created academy. One of his first acquaintances was Christian Goldbach (1690–1764), the permanent secretary of the academy, also appointed to a chair in mathematics. He had come to Petersburg from his native Germany at the time of the founding of the academy to offer his services, but was only accepted after some hesitation. Goldbach had an enthusiastic interest in mathematics as well as in many other fields, but never became a mathematician of first rank. He wrote some

minor papers in the *Acta Eruditorum* and was in active correspondence with Leibniz and several members of the Bernoulli family. By training he was a jurist and spent most of his life in administration work. After his initial service at the academy he moved to the court in Moscow as teacher for Emperor Peter II; he ended his days as a Geheimer Rat in the Russian Foreign Service, a most distinguished and influential position.

The correspondence between Euler and Goldbach has been published before: P. H. Fuss, *Correspondence mathématique et physique de quelques célèbres géomètres du XVIIIème siècle* (St. Petersburg, 1843). This work, by now very rare, restricted itself to the mathematical parts of the letters, omitting all personal information concerning the correspondents and scientific life in the early days of the academies in Berlin and St. Petersburg. This new edition not only gives the letters in their complete form but includes several previously unpublished ones from Russian archives. The editors have added a considerable number of careful notes, some concerning persons, others, still more valuable, in regard to the subsequent history of the problems under discussion.

The correspondence covers a great variety of mathematical topics: integration, applications to geometric problems, summations of infinite series, and particularly problems from number theory. Euler, of course, exerted the dominating mathematical influence, and the letters give interesting information concerning the time of inception for many of his results. But Goldbach also contributes various ideas: his famous conjecture that every even number is the sum of two primes occurs in a letter from Moscow dated 27 May, 7 June 1742. The first group of letters is written in Latin, but after Euler's transfer to the academy in Berlin both writers revert to their mother tongue, German.

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Nicolaus Steno. *Lecture on the Anatomy of the Brain.* Introduction by Gustav Scherz. Facsimile of the original French document, plus English and German translations. 208 pp., illus. Copenhagen: Nyt Nordisk Forlag Arnold Busck, 1965. (Paper.)

In 1665 Nicolaus Steno — the famous Danish anatomist, geologist, and theologian, whose name we associate eponymously with the parotid duct — read an essay on the anatomy of the brain to an assembly of scholars in Paris. Three hundred years later a small symposium commemorating this event took place in the city of his birth, Copenhagen, and this volume was produced especially for the occasion.

The essay, *Discours de Monsieur Stenon sur l'anatomie du cerveau,* was not published until 1669. Although the original edition was limited and copies therefore became rare, an English translation has always been readily available. Winslow included Steno's lecture in his textbook of anatomy and G. Douglas translated it together with the rest of the book in 1733. Moreover, James' famous dictionary (R. James, *A Medicinal Dictionary,* Vol. 2, London, 1745, under *Cerebrum*) contained the same translation and it was reprinted again, together with some notes and a facsimile of the original, in 1950.

The present book also contains a facsimile of the 1665 French text with the four plates; it is followed by an excellent introduction, which is the work of the world's authority on Steno, Father Gustav Scherz of Copenhagen. In it he discusses the historical background of the *Discours* and he includes a number of interesting and previously unknown associations; it is accompanied by a number of illustrations of maps, prints, and portraits. There are also notes to the *Discours,* a new English and a new German translation, and finally an attempt to give modern anatomical terms to the structures depicted in two of the brain drawings.

The *Discours* is a remarkable document, which was written when Steno