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Galen and the Usefulness of the Parts of the Body, translated from the Greek with an Introduction and Commentary by MARGARET TALLMADGE MAY, Ithaca, New York, Cornell University Press 1968, 2 vols., pp. xv, 802, \$25 (238s.).

'Claude Galien, De l'Usage des Parties du Corps Humain. Traduit de Grec et Latin et mis en bel ordre par questions et responses pour la facilité des jeunes étudiants en Chirurgie' (par A.E.B.D.C.I. Paris 1659). This title perhaps best epitomizes the significance attached to Galen's masterpiece on physiology and its anatomical basis. It shows its use as the authoritative textbook for students in general and those of surgery in particular. The edition of the version cited appeared two years after the death of Harvey. It was presented broken up into a series of questions and answers—a difficult and often lengthy argumentative text—made easy to digest for the learner-surgeon. From him, unlike his medical *commilitones*, no sufficient time and working knowledge of Latin (let alone of Greek) could be expected for a perusal of the extant Latin translations of the original. It is perhaps no accident that such a work should appear in several editions in France at that time—the age of Guy Patin and Riolan. In fact, France was the only country to produce a translation of the full text in the vernacular, starting with the classic work of Jacques Dalechamps (1513–1588) first published in Lyons in 1565, and then again in 1566, 1609, 1659, 1664.

It was finally in France and at a quite different level in historical criticism that the standard translation was produced by Charles Daremberg (1854–1856). This work has been indispensable for generations of historians and medical readers at large. There has been no English translation and only the fragment of a German version (1805). This situation is now changed through the publication of the work under notice. It can be said at once that it is a monument of scholarship and of the highest value. This applies not only to the help that can be derived from the translations as such, but also to the revision of the text, based as it is on first-hand (including manuscript) sources, and to the multitude of learned explanatory notes that are here offered.

The work thus meets a special need felt today. For again Galen has emerged from a cloud. In the early years of this century he was uncritically summed up as a *Seichbeutel* (Windbag) by the prince of critical classicists Ulrich von Wilamowitz-Moellendorf. Against this the dissenting voices of Julius Pagel and Theodor Meyer-Steineg had little chance to be heard. The label has been re-used the more often the less the patience of the writers grew with Galen's rationality and teleology and the shorter the narratives became. Galen's brilliant and far advanced experimental observations and demonstrations, especially on the central nervous system, on respiration, on the blood content of arteries and many other topics, were thus not given their due relief and prominence. This is different today and the present work will go far to restore the true Galen to the English speaking world. In 44 introductory pages we are given clear and helpful accounts of the textual tradition, of the contents of the treatise, of anatomy before Galen and of the latter's contributions to anatomy and his system of physiology. The work closes with an excellent bibliography and index running to 65 pages. The translation steers a happy course between the 'faithful' and the 'beautiful'. The reviewer found it most pleasant reading where he made

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random comparisons with the original and other translations. He admires the skill of the present translation all the more as he himself has to confess to a weakness for the literal translations of bygone days. Perhaps he may be allowed to point out in defence of his preference one *locus* in which he would advocate the simple literal translation.

Galen plainly says that *poly—much*—of the blood in the right ventricle is taken to the left ventricle across intraseptal communications (Book VI, cap. 17, ed. Kühn, III, 497). This in the standard translations reads: *multus is (i.e. sanguis) per medium septum . . . transmittitur*. In the translation under notice the *poly—multus*—is rendered: *a considerable quantity of blood* (p. 324). We believe that *much* would have been more accurate. The literal translation in this case would avoid any possible colouring of the phrase which could perhaps tend to diminish the extent of Galen's error. In fact the *poly—much*—of the original has been played down in the Galen-literature with misleading results.

A further point related to this topic has nothing to do with the translation. It concerns Galen's supposed knowledge and understanding of the pulmonary transit of venous blood—commonly but wrongly called: the lesser circulation. Here the author tends to side with those who accord to Galen some such knowledge: 'Galen had a very rudimentary conception of a pulmonary circulation' (p. 301, note 43). This presupposes that (a) blood reaches the branches of the pulmonary veins *in the lung* and here mixes with air and (b) that 'this combined blood and modified air is then powerfully attracted by the left ventricle of the heart' (p. 55). And again: 'sooty waste to escape before the next surge of blood and modified air comes toward the left ventricle' (p. 56). The first assumption certainly corresponds to genuine Galenic doctrine: Galen describes the anastomoses between branches of the pulmonary artery and vein *in the lung* (a). He also tells us that blood is transfused through these anastomoses drop by drop and that this is good for the lung and that the latter is in need of arterial blood. All this concerns what happens *in the lung*. Nothing, however, is said about the entry of blood into the left atrium of the *heart* (b). It is only by inference that some authors have assumed this, for example, because the pulmonary vein ranges among the arteries—it is the *venous artery*—and should therefore like all other arteries carry blood. Galen, however, is nowhere explicit about this. What he is explicit about is the entry of air or a product thereof into the left heart by the pulmonary vein. Indeed as far as the texts themselves are concerned, Galen may never have assumed that blood enters the left ventricle. Instead he may have wanted all the blood in the intrapulmonary branches of the pulmonary veins to be used up in the lung for its nutrition with aired, i.e. arterial, blood. Galen's reticence concerning the entry of blood into the left heart has been a perennial problem. It probably accounts for the medieval-Arabistic theory that arterial blood reaches the lung in a retrograde movement from the left ventricle *via* the left atrium and the pulmonary veins. This was still adhered to at the close of the sixteenth century (Laurentius, 1600, the early Riolan, 1618, 1626), to be opposed by Caspar Hofmann (1627). Its rationale seems to have been that (a) the lung was in need of arterial blood and that (b) the latter could only be produced in the left ventricle of the heart, both (a) and (b) being genuine Galenic doctrine. However the dominant Galenic tradition

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throughout the ages remained that it was the office of the pulmonary veins to bring air to the left heart and take away the smoky products of combustion. Today it is fully justified to point out how far Galen had really advanced and that on the basis of some of his first principles (such as the arterial blood content) he could and should have arrived at a transit of the arterio-venous pulmonary blood, but that he fell short of the final synthetic piece. This would have put him in possession of even a rudimentary knowledge of the transit ('lesser circulation'). We know nothing about the reason for his failure. We may conjecture several such reasons. First that it was his decentralising attitude towards the blood—the several portions of blood and bloods which he saw in connexion with several organs of origin (liver, heart, lung) rather than in uni-directional movement. More directly influential was probably his pre-occupation with *pneuma* and its provision for the heart by the lung. This would explain his definiteness concerning the entry of air as against his reticence about that of blood. In this respect perhaps the most revealing passage occurs in the treatise *On Anatomical Procedures* (VIII, 14; ed. Kühn, II, 638; tr. Ch. Singer, London 1956, p. 195). This deals with reports of all the arteries becoming motionless on ligaturing the pulmonary vein. The reason for this, Galen says, is obviously their *deprivation of the supply of spirit* that should fill them (*hos an delonhoti ten choregian tou plerountos autas pneumatos apheremenas; tanquam suppeditatione spiritus ipsas replentis destitutae*; tr. Singer: being of course deprived of the supply from the lungs that fills them (omitting [why?] *pneumatos*).

We may finally mention Mrs. May's valiant defence of Galen concerning his reputed idea of an ebb and flow and pluri-directional movement of the blood in the veins (p. 301–2, note 43). This is admitted for the portal system and for the transport of pathological residues, but not as one of the general principles in Galen's cardiovascular doctrines. A plausible way towards a solution of the problem.

Seen in perspective the few points which we have singled out for discussion cannot claim any significance for the work as a whole. They show the difficulties which the interpreter of Galen may have to face and the magnitude of the task so well accomplished in the book under notice. Nor can our discussion imply any criticism. On the contrary it should enhance our admiration and gratitude to Mrs. May for providing easy and reliable access to one of the great and universal geniuses of classical antiquity—a genius who is 'modern' and indispensable in so many ways and yet not easy to grasp in view of his limitations, obscurities and apparent self-contradictions. All this gives the present book the stamp of permanent value as a source of instruction and a basis for discussion wherever Galen is mentioned—and can there be any field in historical anatomy, physiology and medicine where he is not?

WALTER PAGEL

The University of Edinburgh and Poland, ed. by WIKTOR TOMASZEWSKI, Edinburgh, Graduates of the Polish School of Medicine, 1968, pp. ix, 95, illus., 60s. [Copies from the editor, 2 Wilton Road, Edinburgh 9.]

This festschrift, celebrating the twenty-fifth anniversary of the opening of the Polish School of Medicine at Edinburgh University, records the close—if spasmodic—cultural and social links between Scotland and Poland from the sixteenth century