

RES MEDICA

Journal of the Royal Medical Society



The Second Branch of Learning

I.S. Palin

Abstract

Our society is peculiarly reluctant to acknowledge any debt to its forebears other than those of definitely western nature. Much is made of the Greek and Roman origins of our ideas and ideals, while the contribution of other, more eastern, societies is usually omitted or glossed over in the course of education and in no case is this better demonstrated than in the case of our debt to the once mighty and glittering civilization of the Moslems. Centuries of misunderstanding and resulting conflicts, culminating in the savage and bloody military failure that was the Crusades, and the westward surge of the Ottoman Turks who, by the late 17th century had reached as far as Vienna and were only narrowly repulsed, produced a torrent of propaganda from both sides which even now obscures the historical closeness of Christian and Islamic societies and the role of Moslem learning in promoting the great awakening that was the Renaissance.

It comes as a surprise to many to find that while Europe was sunk into its "dark ages" there was a civilization in the Middle East with a stability, culture and level of achievement that the West was not to know till the 18th century. The caliphs in Baghdad, at the height of their power, ruled an empire of which it was said that a virgin with a sack of gold could walk from one border to the other without fear of molestation. Their capital was not only a city of glittering mosques and fountains, of paved and torch lit streets, but a city of universities, free hospitals, and public libraries. Islamic learning was so famed that at least one of the Popes, Sylvester II, attended a Moslem university to complete his education before his elevation to the pontificate. Curiously enough, of the great physicians of this period few were Arabs, though the majority were Moslems. The noted Avicenna (980-1036), and Rhazes (864-C.920) were Persian, while Averroes (Ibn-Rushd), 1126-1198, and Avenzoar (Ibn-Zuhr, 1109-1162) were Moors, and the philosopher and scientist Maimonides (1135-1204), whose medical writings alone would have been sufficient to ensure his immortality, was Jewish by both race and religion.

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ISSN: 2051-7580 (Online) ISSN: 0482-3206 (Print)

Res Medica is published by the Royal Medical Society, 5/5 Bristo Square, Edinburgh, EH8 9AL

Res Medica, Autumn 1973: 3-5

doi:[10.2218/resmedica.v0i0.903](https://doi.org/10.2218/resmedica.v0i0.903)

meeting per week which necessarily does not attract all medical students, there could be a number of smaller meetings, perhaps utilising mainly Edinburgh speakers, arranged by various groups within the Society. For example, there could be groups on renal medicine, gastro-enterology, etc., and there could also be paraclinical and preclinical groups. These latter two fields are ones in which the Society fails at present to provide much of interest, as the members, and especially those who are organising such meetings, are predominantly from the senior clinical years. In such a way a planned programme of learning could be devised by groups of students interested in a particular field, and although the attendance at these meetings might be low the benefit derived from them would be relatively large. Such projects would not necessarily be more expensive than the present way in which the R.M.S. organises its meetings but, even if it were, I feel that this benefit derived by Edinburgh undergraduates would be far greater than that obtained from an elaborate R.M.S. Symposium like "The Immunological Aspects of Cancer", which, although an outstanding success from the prestige point of view, benefited very few Edinburgh medical students

and cost £1,500.

I have perhaps painted a rather black picture of the Society, which is in fact flourishing in its own sweet way. Membership has risen this year, and, far more important, attendance has been of a high level. Our own library has grown and is about to be supplemented by a tape-slide library for 24-hour use. By this scheme, members will be able to freely borrow tapes from the extensive Medical Recording Service national tape-slide library for use on R.M.S. equipment. Our Travel Scholarships are thriving and many non-members have benefited from this scheme. R.M.S. is under no moral obligation to allow non-members to benefit from this money, but I am glad that it is sufficiently outgoing to continue to do so.

These may be seen as faltering steps on the road to improvement but the Society must change further in order to become the forum for medical student opinion. It must change its organisation, its role, and its image, but I hope that it does not forget that its prime objective is in the academic field. The Society was created as a body for the self-education of medical students and this is just as pertinent now as it was in 1737.

THE SECOND BRANCH OF LEARNING

I. S. PALIN

"There are two branches of learning — religion and medicine"

(Saying attributed to the Prophet Muhammad.)

Our society is peculiarly reluctant to acknowledge any debt to its forebears other than those of definitely western nature. Much is made of the Greek and Roman origins of our ideas and ideals, while the contribution of other, more eastern, societies is usually omitted or glossed over in the course of education and in no case is this better demonstrated than in the case of our debt to the once mighty and glittering civilization of the Moslems. Centuries of misunderstanding and resulting conflicts, culminating in the savage and bloody military failure that was the Crusades, and the westward surge of the Ottoman Turks who, by the late 17th century had reached as far as Vienna and were only narrowly repulsed, produced a torrent of propaganda from both sides which even now obscures the historical closeness of Christian and Islamic societies and the role of Moslem learning in promoting the great awakening that was the Renaissance.

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civilization in the Middle East with a stability, culture and level of achievement that the West was not to know till the 18th century. The caliphs in Baghdad, at the height of their power, ruled an empire of which it was said that a virgin with a sack of gold could walk from one border to the other without fear of molestation. Their capital was not only a city of glittering mosques and fountains, of paved and torch lit streets, but a city of universities, free hospitals, and public libraries. Islamic learning was so famed that at least one of the Popes, Sylvester II, attended a Moslem university to complete his education before his elevation to the pontificate. Curiously enough, of the great physicians of this period few were Arabs, though the majority were Moslems. The noted Avicenna (980-1036), and Rhazes (864-c.920) were Persian, while Averroës (Ibn-Rushd), 1126-1198, and Avenzoar (Ibn-Zuhr, 1109-1162) were Moors, and the philosopher and scientist Maimonides (1135-1204), whose medical writings alone would have been sufficient to ensure his immortality, was Jewish by both race and religion.

The basis of Moslem medicine was in the classical teachings to which they fell heir and added. Ibn-Sina (known in the West as Avicenna) is probably the best-known of the Moslem physicians, parti-

cularly for his painstaking Qanun (Canon) of Medicine, an encyclopaedic work ranging through much of medicine and including an admirably clear description of skin diseases. But it was Rhazes, the impressively-named Abu-Bekr Muhammed Ibn-Zakariyya al-Razi, who was the greatest physician Islam produced, worthy to take his place with such immortals as Galen and Hippocrates in the medical pantheon. Born at Rayy, near Teheran, he established a continent-wide reputation for the scholarly and humanitarian practice of medicine, a profession he took up only in middle life. As head of the hospital in his native town he delegated much of the work to his pupils, and to the pupils of his pupils. New cases were admitted by those latter, who if in difficulty would call in one of Rhazes, immediate pupils, or in particularly perplexing cases the great man himself. Invited to participate in the setting up of a new hospital in Baghdad, he had pieces of meat hung on strings in various parts of the city where land was available and sited the hospital where the meat had shown least signs of decomposition. Needless to say, he became the physician-in-chief of this hospital.

An example of Rhazes' clinical approach is given in his account of one of his own cases of a man with pyelonephritis:

"Abdu'llah Ibn-Sawada used to suffer from attacks of mixed fever, sometimes quotidian, sometimes tertian, sometimes quartan, and sometimes recurring once in six days. These attacks were preceded by a slight rigor, and micturition was very frequent. I gave it as my opinion that either these accessions of fever would turn into quartan (i.e. would adopt a malarial pattern) or that there was ulceration of the kidneys. Only a short while elapsed ere the patient passed pus in his urine. I thereupon informed him that these feverish attacks would not recur, and so it was.

"The only thing that prevented me at first from giving it as my definite opinion that the patient was suffering from ulceration of the kidneys was that he had previously suffered from tertian and other mixed types of fever: moreover the patient did not complain to me that his loins felt like a weight depending from him when he stood up, and I neglected to ask him about this. When he passed the pus I administered to him diuretics until the urine became free from pus. That the pus was evacuated quickly indicated a limited ulceration. The other physicians whom he consulted besides myself, did not understand the case at all, even after the patient had passed pus in his urine."

Rhazes' ethical teachings reveal him as a basically tolerant and rational man — perhaps too rational for some, since he regarded the idea of romantic love as something for "Bedouins, Kurds, and such-like clodhoppers", not for thinking and mature people. (In this he was echoed by Avicenna, who classed love as a "cerebral or mental disease" along with somnolence, insomnia, amnesia, mania, hydrophobia and melancholia). He anticipated by many centuries current health education campaigns by describing drunkenness as "one of the evil dispositions that bring those indulging it to ruin, calamity and all kinds of sickness. This is because the excessive drinker is imminently liable to apoplexy and asphyxia . . . rupture of the arteries of the brain, and stumbling and falling into crevices and wells; not to mention various fevers, bloody clots, and bilious swellings in the intestines and

principal parts, and delirium tremens and palsy, especially if there be a natural weakness of the nerves".

Rhazes' religious speculations — most of them now lost — were so unorthodox as to bring upon him the attacks of the Moslem clergy, and the cataracts which blinded him towards the end of his life were attributed to Divine punishment.

A curiously modern-sounding admonition to medical students of this time reads —

"And of those things which are incumbent on the student of this Art are that he should constantly attend the hospitals and sick-houses: pay unremitting attention to the conditions and circumstances of their inmates, in company with the most acute professors of medicine: and enquire frequently as to the state of the patients and the symptoms apparent in them, bearing in mind what he has read about these variations and what they indicate of good and evil".

Nor was the more experimental side of medicine neglected. In the 10th Century Al-Majusi described the pumping action of the heart in some detail, and postulated communicating pores between the arteries and the veins, while the 13th Century Ibn Al-Nafis described the pulmonary circulation and denied the Galenic theory of pores in the cardiac septum permitting the passage of blood. These two Moslems therefore published, some hundreds of years before William Harvey, the theory of blood circulation for which our histories still give the British physician credit!

An example of the standard of European medicine in the period we are discussing provides some comparison. A Saracen Emir, at a time of truce with the Crusaders then occupying the Holy Land, sent his personal physician, a Christian Arab named Thabit, to treat some of their sick, at the request of a Crusader lord. On his arrival Thabit found two patients, a man with an abscess in his leg and a consumptive woman, and commenced to treat the former by polticing, the latter by a suitable diet and herbs. Both began to progress but a Frankish doctor intervened, announced this treatment as useless, and turned to the man to ask him whether he preferred to die with two legs or live with one. Not unnaturally the man preferred the latter, whereupon the abscessed leg was amputated with such vigour that the man died almost at once. The doctor then decided that the woman was possessed of a devil in her head. Her hair was shaved off, her diet of fruit and vegetables was stopped, and she was fed instead on the normal Crusader diet of bread, garlic and oil: as she grew worse the Frank had a deep sign of the cross cut on her head, exposing the bone. Salt was rubbed in, but sepsis and death ensued. "I returned home", comments Thabit, "having learned of their medical practice that which had hitherto been unknown to me".

This is not to say that Islamic medicine was free of the mystico-religious outlook that helped hold back development of the art in Europe. The heretical sect of the Isma'ilis, who gave rise to the notorious secret society of the Assassins, were particularly active in this respect and would arouse the interest of potential converts with such questions as "Why has man seven cervical and twelve thoracic vertebrae?" and "Why has each of the fingers three joints but the thumbs only two?", various answers based on numerology being given. Much was made of the fact that the number of joints on the two hands was the same as the number of permanent teeth, the

number of days in the lunar month (which is used in the Moslem calendar) and the number of letters in the Arabic alphabet. Nonetheless, the evident erudition of Moslem doctors compared to their western counterparts was so great that the more progressive of Christian physicians appreciated what was translated from their writings. Chaucer's *Doctor of Physick* has no less than six Moslems in his list of authorities:

"Well know he the old Esculapius,
And Dioscorides, and else Rufus;
Old Hippocras, Hali, and Gallien;
Serapion, Rasis, and Avicen;
Avarrois, Damascene and Constantin;
Bernard, and Gatsden, and Gilbertin".

Little wonder that Christian rulers who were in close communication with neighbouring Islamic states, as in partitioned Spain and in the Crusader-ruled Holy Land, used to send to the Moslems when they wanted a good physician!

I have attempted to give a brief outline of the debt our current medical practice owes to the great doctors of classical Islam, and in conclusion I cannot do better than quote from Meyerhof's authorita-

tive work "The Legacy of Islam" —

"Looking back we may say that Islamic medicine and science reflected the light of the Hellenic sun when its day had fled, and that they shone like a moon, illuminating the darkest night of the European Middle Ages: that some bright stars lent their own light, and that moon and stars alike faded at the dawn of a new day — the Renaissance. Since they had their share in the direction and introduction of that great movement, it may reasonably be claimed that they are with us yet".

NOTE :

For those who wish to follow up this subject the writings of Edward Browne are recommended, who qualified in medicine, turned to Middle Eastern studies and went on to become Professor of Arabic at Cambridge. His scholarly work "Arabian Medicine" (C.U.P. 1921) is available from the Central Medical Library. The quotations in this article come from various sources and are translated either by Browne or by A. J. Arberry, the present Professor of Arabic to Cambridge University.

NATRIURETIC HORMONE

HEATHER A. DAVIS

Until about 1957 it was generally accepted that the regulation of renal sodium excretion was dependent solely upon changes in

- (a) glomerular filtration rate (Factor 1) and
- (b) the activity of the renin-angiotensin-aldosterone system (Factor 2).

coupled with the effect of changes in intrarenal haemodynamics and physical factors, such as hydrostatic pressure surrounding renal tubules, and plasma protein osmotic pressure in peritubular capillaries.

Since that time, however, evidence has gradually been accumulated to suggest that these are not the only factors which are relevant in this context, and the existence of a humoral inhibitor of renal sodium reabsorption has therefore been postulated. This 'third factor' has been given the name of natriuretic hormone, and indications of its presence have been found in two principal situations. These are

- (a) 'Sodium escape' during chronic mineralocorticoid administration
- (b) Volume expansion with
 - (i) isotonic saline
 - (ii) blood

'Sodium escape' during chronic mineralocorticoid administration

When the extracellular fluid volume was expanded in healthy humans or dogs by chronic mineralo-

corticoid administration, an initial diminution of sodium excretion resulted, followed within a few days by a rise to control levels (2, 37). This 'sodium escape phenomenon' was attributed as early as 1957 to the existence of a circulating natriuretic hormone (37).

The presence of such a hormone was for some time disputed as many potential natriuretic factors have been identified during 'sodium escape' from chronic mineralocorticoid treatment. Other natriuretic factors include decreased plasma renin concentrations, increased glomerular filtration rate and increased renal plasma flow. Sodium escape has, however, been shown to occur in the absence of each of these variables, thus indicating that none of them is critical to the escape mechanism (see 8).

Recently, additional evidence for the existence of a circulating natriuretic hormone has been provided by Buckalew and Lancaster in 1972 (8). They demonstrated the presence of a substance with natriuretic activity in ultrafiltrates of jugular venous plasma when 'sodium escape' occurred in dogs undergoing chronic administration of deoxycorticosterone acetate (DOCA).

Volume expansion with isotonic saline

There is much evidence to suggest that when the blood volume of an animal is expanded with isotonic saline, the rise in urinary sodium excretion which