

THE HISTORY OF MEDICINE VERSUS THE HISTORY OF ART

*George Sarton**

In remembrance of Fielding H. Garrison

I appreciate the honor of having been invited to deliver this lecture, and I welcome the opportunity of paying homage to the memory of an old friend, who was a distinguished historian and did perhaps more than anybody else to promote the cultivation of the history of medicine in our country. There is no medical or reference library, however small, without a copy of one of the editions of his *Introduction to the History of Medicine*¹ and many American doctors have derived their knowledge of the subject almost exclusively from it. They were fortunate in having such a good source of information, for Garrison's Introduction is, all considered, the best one volume account of the medical past, especially the more recent past which concerns more immediately our contemporaries.

Herman Boerhaave

The subject of my lecture was selected on two grounds. Firstly, it enabled me to reassess the views formulated in the essay introducing

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Isis (1912); and secondly, it was a means of showing the humanity of Garrison's history. In spite of the lack of space, for the evocation of the whole medical past in less than a thousand pages is somewhat of an adventure, Garrison always managed to add the human touch without which history remains hopelessly dull. He thus illustrated his own sensitiveness to the essential if elusive values without which our life has no savor and hardly deserves to be recorded.

He was especially sensitive to music, witness his many references to it. These references were of necessity very brief, but I shall expand two of them in order to bring forth their rich implications.

I have the reputation of being a hard worker and among the physicians listening to me to-day there are perhaps many who work as hard as I do, or harder still, yet as compared with the famous Dutch physician, Herman Boerhaave, we are but self-indulging weaklings. According to his early biographer, William Burton,²

The mornings and evenings he devoted to study, the intermediate part of the day to domestic and public affairs. He used to rise during summer at four in the morning, and at five in the winter, even in his later years; ten was his usual bed time. In severest winters he had neither fire nor stove in his study, where he passed the three or four first hours of the morning : his application to study was greater in the last ten years of his life, than in any space of equal duration from the year 1700. When business was over, he took the exercise of riding or walking, and when weary revived himself with music his most delightful entertainment; being not only a good performer on several instruments, particularly the lute, which he accompanied also with his voice, but a good theorist likewise in the science, having read the ancient and best modern authors on the subject, as appears by the lectures he gave on sound and hearing; and during the winter he had once a week a concert at his own house, to which by turns were invited some select acquaintance of both sexes, and likewise patients of distinction from other countries.

His teaching should presumably be understood as a part of those "domestic and public affairs" which occupied the intermediate part of his day. Perhaps he thought, as many scholars do, that teaching was not real work but rather an interruption of it. And yet he taught a lot, not only clinical medicine and ophthalmology (in 1708, he gave the first special course on that subject), but also physics, chemistry and botany ! In those

days, famous professors did not occupy a chair but a whole settee.

Boerhaave's musical interest must have been deep, for he devoted a special section to it in his autobiography. That section (XXII) is very brief (seven words), but that is of a piece with the rest. Boerhaave was too busy a man down to his last day to indulge in reminiscences. Here it is

XXII. Fessus testudinis concentu solabatur lassitudinem. Musices amantissimus.

How eloquent those few words ! Since I have read them and pondered upon them, Boerhaave is more alive to me than he was before, and I can almost see him with his 'testudo' (not a tortoise that, but a lute) relaxing his mind when his duty was done.

Billroth and Brahms

The other story concerns Billroth, whom you probably know better than I do. Theodor Billroth (1829-94) was one of the greatest surgeons of his time; the pioneer of visceral surgery.⁸ Whatever be his greatness or his shortcomings as a surgeon, we shall love him better if we realize that he was a life-long friend of Johannes Brahms (1833-97). Brahms and he became very intimate in Zürich, and when Billroth was called to Vienna, Brahms, being a bachelor and without position, followed him there. Though they spent much of their time together and often travelled together, they exchanged a great many letters, of which 331 are preserved.⁴ These letters deal chiefly with musical matters, most of Brahms' works being friendly discussed. The surgeon's villa in Alsergrund (a suburb of Vienna) became a musical center. Indeed, he enjoyed the *jus primae noctis* over Brahms' new creations, and the friends of both masters were given opportunities of hearing for the first time some of the masterpieces of chamber music. Did they appreciate their privilege ? Probably not, but we are interested here primarily in the relationship between the composer and the doctor, — a relationship which is, I believe, unique in its intensity.⁵ Billroth was a good amateur,

a clever pianist and a capable viola player much in demand for quartets⁶ (bless the gentle violists for we need them). Under the combined influence of his scientific studies and of Brahms' conversations, Billroth devoted more and more thought to the psycho-physiological basis of music and gathered a number of notes on the subject which were edited after his death under the title "*Wer ist musikalisch ?*"⁷ by no less a person than Eduard Hanslick (1825-1904). Who remembers Hanslick to-day ? Yet he was the leading critic of the German world, pontificating for a third of a century in the *Neue freie Presse*, defending with painful iteration the canons of "musical beauty" and of the "significant form" (*beseelte Form*). He was a member of the *Brahmsgemeinde* (Brahms clique) and was the champion of the Schumanns, of Brahms, of Dvořák against the *Musik der Zukunft*.⁸ If Liszt and Wagner irritated him so much what would he have thought, I wonder, of the musical anarchists of our own days, of the 'jazz' and 'swing,' of all the music which seems to be written for the spinal chord rather than for the brain ? At that time the arch offender was Wagner, and I sometimes ask myself whether Hanslick was not right in his distrust of the Wagnerian witchery ? Historians discussing our times a few centuries hence will be able to discern more clearly than we can the spiritual origins of the present chaos. They will probably recognize Wagner and Nietzsche as the leaders in the movement to pull Germany back to the Nibelungen level.

Personalities are more important than achievements

There is considerably more to be said about medicine and music, but these two examples must suffice. It is more pleasant to talk about that, I think, than to write, for the talking would be less deliberate and we could digress more capriciously, and perhaps stop talking to listen to music. For what is the good of talking about music ? Let us listen. Take the *Third piano quartet in C minor* (op. 60). When Brahms sent the finished work to Billroth in 1874 he wrote "I am showing you the quartet purely as a curiosity ! An illustration as it were, to the last chapter of the man in a blue swallow tail and yellow waistcoat ..." Or take the two *Rhapsodies for piano*, dedicated to Frau Elisabeth von Herzogenberg (op.

19, c. 1878). Listen and remember Billroth's comment "In these two pieces there lingers more of the titanic young Brahms than in the last works of his maturity." Without the music itself, either present or remembered, these words are meaningless, and there is no point of quoting more.

To return to the history of medicine, I am afraid that many physicians think of it too much in terms of a list of discoveries and achievements. In fact, such lists have been compiled in such dry and impersonal manner that the names of physicians associated with each "item" might almost be replaced by an *x*, *y*, or *z*. Such lists are useful, but they are to the history of medicine hardly more than a skeleton to a living body. The skeleton is indispensable to be sure, but very insufficient.

A mere list of discoveries is a falsification of the history of medicine, even from the purely scientific point of view, for such a list exaggerates the discontinuities in medical progress. A deeper study of almost any discovery reveals that what we call the discovery is only the final clinching of an argument developed by many men throughout a long period of time. However, such a list is a far greater falsification from the broad human point of view.

The history of science, and in particular the history of medicine, we could not repeat it too often, is not simply an account of discoveries. Its purpose is to explain the development of the scientific spirit, the history of man's reactions to truth, the history of the gradual revelation of truth, the history of the gradual liberation of our minds from darkness and prejudice. Discoveries are evanescent, for they are soon replaced by better ones. The historian must try not only to describe these evanescent discoveries but to find in science, that which is timeless. When he does that he comes very close to the historian of art. To put it in other words, a man's name may be immortalized by his discoveries. Perhaps there was nothing else in him deserving of remembrance? He may have been a poor sort of man, a man whose mind was as sharp and narrow as a knife...? Or else the historian betrayed him? In so far as a scientist is

also an artist, his personality can survive, otherwise not. It is the historian's main duty to revive the personalities, rather than to enumerate their scientific excrescences. Discoveries are important, personalities infinitely more so.

The history of art as a means of explaining traditions

The materials investigated by historians of art often are of great value to historians of medicine, because artistic traditions are likely to be more tangible than purely scientific ones. This is especially true of ancient and mediaeval times, during which the diffusion of knowledge was necessarily difficult and erratic. Beautiful monuments had on the whole a better chance of survival than others, and their language is easier to understand, even today. Dr. Sigerist has given remarkable examples of the mutual aid of the history of medicine and the history of art in his lecture "The historical aspect of art and medicine."⁸ Remember his pictorial history of the plague, and his account of the transformation of Apollo into St. Sebastian, both being saviors or intercessors in times of pestilence.

Such examples might easily be multiplied and a balanced explanation of them would enrich, as well as fortify, our traditions. I have adumbrated some of them in the first volume of *Isis* (p. 21-25) — e.g., apropos of the history of cultivated plants — and in my *Introduction*, e.g., indicating the importance of the pilgrimage roads, such as the Way of St. James (to Santiago de Compostela), and of the dispersion of Romanesque and Gothic architecture.

Much as they are needed for the following up of Western traditions, they are needed considerably more for the understanding of Eastern ones. Indeed, Western traditions are supported by literary witnesses in Greek, Latin or vernaculars which offer no special difficulties; while the Eastern literatures are generally closed to all but a few orientalists, and the latter's knowledge is almost always restricted to a single group of languages. Now consider this case. In the beginning of the fourteenth

century, a most remarkable culture was developed in Tabrīz under the patronage of the Mongol rulers of Persia. The spiritual leader was Rashīd al-dīn, physician, theologian and one of the outstanding historians of the Middle Ages. He wrote chiefly in Persian, but had a deep knowledge of Arabic and was acquainted (directly or through secretaries) with documents written in Hebrew, Uighūr, Mongolian and Chinese. A scientific edition of his works requires a good knowledge of all of those languages.⁹ This you will admit is a big order. Happily the cosmopolitanism of that age and place can be perceived almost immediately by any person sensitive to artistic values and knowing sufficiently the peculiarities of Asiatic arts. Indeed, under the patronage of the same Rashīd al-dīn, there blossomed in Tabrīz a school of miniaturists whose works reveal immediately the same Chinese influences which can be only detected in the text by that *rara avis*, an Orientalist as familiar with Chinese as with Persian and Arabic. Indeed Chinese traits are just as obvious in those fourteenth century miniatures,¹⁰ as they were to become four centuries later in the ubiquitous "chinoiserie" which delighted our Rococo ancestors.

Alexander von Humboldt

The view that we need art for the understanding of science and *vice versa* is by no means a new one, but it is so often forgotten or obscured by good scientists and by good historians that it is necessary to give it from time to time new strength and new life, and to treat it, as if it were a novelty, the most important novelty of our own time. Among the best exponents of it in the last century, was a man who was also one of the pioneers of our own studies. Do you guess whom I mean? I will help you. He should not be difficult to find, for he was a hundred years ago the most famous man in the world. He is not so famous now, for the wheel of fortune never stops turning even after one's death. He is a bit forgotten and when our schoolboys are asked to name the most prominent men no one would think of choosing him. After having received a scientific preparation which was as elaborate as it was diversified, and having crowned it with a literary initiation in the Weimar circle (Goethe,

so critical of others never wavered in his admiration of him), he spent five years exploring South America, then thirty more discussing and publishing the results of his observations. At the age of fifty-eight he delivered in Berlin a series of lectures which were but the sketch of the grand fresco of which he began the publication eighteen years later and to which he devoted the remainder of his life.

That man is — need I name him — Alexander von Humboldt, and the work of his old age to which I referred, is the *Cosmos*. The first two volumes appeared in 1845 and 1847 (when he was 76 and 78), vols. 3 and 4 between 1850 and 1858; he died in 1859 at the age of 90, and volume 5 appeared three years later. We need consider only the first two volumes. The first contains an elaborate description and explanation of the physical world, and the second is a history of science. Thus Humboldt was a pioneer in geographical synthesis, and also in historical synthesis. He was a founder of the new geography and also of the new history. The first innovation was rapidly understood and was developed in many countries; the second was comparatively neglected. Geography and history are two necessary bases of a man's education; even as some knowledge of geography removes his provincialism with regard to space, that is, teaches him that things are not necessarily better in his own village, in his own metropolis or in his own country than elsewhere, even so a knowledge of history is the only way of removing his provincialism with regard to time, that is, of making him realize that things are not necessarily better in his days than in earlier or may be in later ones. Neither geography nor history were new in Humboldt's days, but he increased considerably the scope and the implications of both. For example, he showed that history should be focussed upon the history of science, and also upon the history of arts and letters, but the most remarkable of all was his realization of the polarity of arts and sciences. After having described nature in volume one of the *Cosmos*, he devoted the second volume to a new description of nature as reflected in the human mind, by the imagination (that is art) or by the reasoning power (that is science). In this respect, he was breaking ground so new that the vast majority of scientists and scholars of to-day have not yet grasped what he was trying to do.

The project was so ambitious that realization fell far short of it, but we could not blame him for that. Pioneers are beginners; they cannot be expected to complete their task; it is not *their* business to complete it. Some day the substance of that volume two will have to be worked out again and rewritten, but it will take a man of unusual learning, artistry and wisdom to do it well. As I see it now the great story which cries to be told is that of the rhythm of the mutual interrelations between science, art and religion. The story is very difficult to tell, because it is not a story of progress like the history of science, but of vacillations and vicissitudes, of harmony followed with chaos, and beauty mixed with horrors. It would be the story of man's sensitiveness to the fundamental problems and the main values of life.

All honor to Alexander von Humboldt for having shown the way, and the more so that we are so slow in following it, and that our scientists, so intelligent in some respects, are so stupid in others, and our artists, so clever, yet so blind. Beauty is there for all to see, and truth, and virtue, but how few realize that they are but different aspects of the same mystery ?

Science versus art

The mention of the mystery brings us close to the heart of our subject, for it is there on its threshold that art and knowledge and faith meet and kneel together. This will appear more clearly when we have examined how far art and science diverge in the ordinary routine of life. After having completed that examination, briefly as we must, we shall retrace our steps and peep once more in the sanctuary.

The outstanding difference between art and science is that the latter is progressive while the former is not. Scientific activities are the only ones which are cumulative and progressive. Thus reading the history of science gives us the exhilarating feeling of climbing a mountain; we may go downward sometime for a short run, or we may turn around its slopes, but the general direction is upward, and the top of the mountain

is lost in the clouds. Every scientist is enabled to start off from the highest level reached by his predecessors, and if he have it in him, to go higher still. The history of art, on the contrary, is like a glacial landscape, a plain wherein many hills are unevenly scattered. You may climb one of those hills and reach the summit, — but then you cannot continue without going down to the level land; then up again, and so on. Up and down like a drunken pendulum.

When I began my ascension of the topless mountain, I used to gloat on that. Progress, here it was indeed and nowhere else. Unfortunately, there is the devil to pay for it. Because of the progressive nature of science, its achievements are evanescent. Each one is bound to be superseded, sooner or later, by a better one and then it loses its practical value and becomes like a neglected tool in a museum showcase. On the other hand, because of its very unprogressiveness the works of art are eternally young. It is very difficult to read an old scientific treatise, for in order to understand it properly, one must know equally well the old science and the new, and everything before and between. It is painful to read Newton, but the plays of Shakespeare are as timely and pleasurable today as they ever were. "A thing of beauty is a joy forever." The following remarks made by Picasso in 1923 throw a curious light on this. Said he,

To me there is no past or future in art. If a work of art cannot live always in the present it must not be considered at all. The art of the Greeks, of the Egyptians, of the great painters who lived in other times, is not an art of the past; perhaps it is more alive today than it ever was. Art does not evolve by itself, the ideas of people change and with them their mode of expression. When I hear people speak of the evolution of an artist, it seems to me that they are considering him standing between two mirrors that face each other and reproduce his image an infinite number of times, and that they contemplate the successive images of one mirror as his past, and the images of the other mirror as his future, while his real image is taken as his present. They do not consider that they all are the same images in different planes.¹¹

Science is progressive and therefore ephemeral; art is non-progressive and eternal. A deeper contrast could not be imagined.

In the field of science, the methods are supremely important. A

history of science is to a large extent a history of the instruments, material or immaterial, created by a succession of men to solve their several problems. Each instrument or each method is, as it were, a crystallization of human genius. Look at the cockpit of an airplane, and ask yourself what was the origin and development of each one of its tools; it is an endless story of patient accumulation and adjustment. On the contrary, in art the results matter more than the methods. I am not interested in knowing how a symphony was produced, how a fresco was painted, how a dish was cooked. The beauty of the symphony and the painting satisfy me, as well as the tastiness of the food and I do not ask for the recipe.

The scientist strives to be more and more objective and accurate; the artist lets himself go and his accuracy is untangible. The scientist says : "If you can measure the thing, you are beginning to know something about it, if not ...," but the artist answers, "What about beauty and love ?"

Science is essentially international, or perhaps we should say supernational. Men of science of all times and places coöperate together; they cannot help coöperating, even if they don't particularly wish to do so, because their task is essentially the same. They are ascending the same mountain, and even when their trails diverge they are aiming at the same goal. Art is tribal, national. To be sure, it may transcend local peculiarities and reach the bedrock of human nature. Yet when we speak of Spanish painting or Russian music we evoke fundamental differences, which may be difficult to analyze, not to say measure, but are as tangible as the air we breathe. Sometime ago I had to write a study on Borodin, who was a distinguished chemist as well as one of the leading Russian composers. In order to reconstruct his background, I had to investigate the contemporary state of *international* chemistry and of *Russian* music.

The scientific procedure is essentially analytic; the artistic one synthetic, intuitive. Scientific discoveries are the result of long evolutions, artistic achievements of short involutions. This applies not only to the creation of scientific or artistic works, but also to their interpretation. We

cannot penetrate the thought of Faraday or Poincaré without a sustained effort, but a Greek statue reveals to us immediately the best of Greece, and a Gothic cathedral illuminates the Middle Age. Science is the field of arduous and unremitting work, and how beautiful the flowers in it if we have earned them with honest travail of limbs or spirit ! Art is the paradise of immediate intuitions.

Medicine, art and religion

All of which is very true, but it is not the whole truth, and I knew it all the time. Let us look together now at the other side of the picture.

In science as in art, there is always a fundamental need of selection. Just as an artist cannot paint every landscape, or a lover love every woman, just so the scientist cannot investigate every problem. None of them has a ghost of a chance, unless he restricts his goal. The immense success of science is due largely to the selection of problems, one at a time, the simplest and easiest first, and so on. Genius in science as well as in art is essentially the ability to select properly.

Then there *is* technical progress in art. The history of music, like the history of science, can be written partly in terms of instruments. The modern symphony is as much an instrumental triumph as the transatlantic flights. Scientific knowledge is not simply rational, a good part of it is manual and intuitive. What a gulf between the born diagnostician and the physician who has learning enough but lacks insight ? There is uncanny wisdom in the hands of a surgeon as well as in those of a pianist.

Science and art have both their collectivist aspects, as well as their individualist ones. The former are seen at their best in religious art and in social medicine, and that rapprochement is suggestive. For what is religious art, but the highest form of social art ? and what else is social medicine but the finest realization of the second commandment "Thou shalt love thy neighbour as thyself." ? Neither religious art nor social

medicine can succeed unless they be sustained by a living faith.

Science, every science and of course medicine above all, is an art as soon as it is applied. It becomes part and parcel of a man's religion, as soon as he is thoroughly conscious of his own insignificance and of his solidarity with the rest of the universe. We cannot understand the history of medicine, unless we see in it not only discoveries and scientific achievements, but also personal defeats and victories, the timeless fruits of men's love and faith. On the other hand, as Canon Streeter has remarked :¹² "Science is the great cleanser of the human spirit, it makes impossible any religion but the highest." The well-tempered historian of medicine will keep this in mind always, and think of men's art and religion, as well as of their learning. He will try to see the whole of their personalities and thus give to his own work its greatest value for other men. Science is the reason, art, the joy, religion, the harmony of life. None is complete without the others. We cannot hope to understand the mystery of life unless we be prepared to consider it from these three angles, and this means first of all that we must drop our scientific conceit, and second, that we must never, never, subordinate humanities to technicalities.

Notes

1. First edition, Philadelphia, Saunders 1913. Reprinted 1914. Second edition 1917. Third edition 1921. Reprinted 1924. Fourth edition 1929. Spanish translation, Madrid 1921/2.
2. Dr. William Burton of Yarmouth : An Account of the Life and Writings of Herman Boerhaave (vii + 226 p., London, 1743). I have consulted the second edition 1746, having exactly the same number of pages (see pp. 62, 212). Boerhaave died in 1738 at the age of 70, and Dr. Burton's biography of him, appearing five years after his death may be considered a contemporary biography.

3. According to Harvey Cushing in his *Life of Osler* (vol. 1, 114, 1925), Billroth had failed to appreciate as late as 1874 the relation of bacteria to suppuration. But that is another story.
4. *Billroth und Brahms im Briefwechsel* (Berlin, 1935), edited by Billroth's son-in-law, Otto Gottlieb-Billroth, who added an elaborate double biography.
5. The *Biographisches Lexikon der hervorragenden Ärzte*, newly edited by Franz Hübotter, devotes naturally a long article to Billroth (vol. 1, 541-42, Vienna 1929), but there is no mention of Brahms. Garrison's account of Billroth is necessarily much briefer, yet he finds space for Brahms. There is your medical humanist !
6. Walter Niemann : *Life of Brahms (passim)*, New York, 1937).
7. First edition, Berlin 1895; I have used the third edition, 1898. The book is disappointing. Its most original feature is its subdivision in a musical way, the chapters being entitled : 1. Marcia, 2. Allegro serioso ma non troppo, etc.
8. Hanslick's main work *Vom musikalisch-Schönen* (Leipzig, 1854) was often reprinted and it was translated into French, Italian, English and Russian. He published many other books and there are a good many writings concerning him, pro and contra. His enemies treated him as roughly as he treated them. According to Stewart Deas : *In defense of Hanslick* (London, 1940), one of them said "Hanslick was, in fact, the most colossal ignoramus and charlatan that has ever succeeded in imposing himself on an editor as a musical critic." I can imagine that Hanslick's dogmatism and pedantism were sometimes unbearable, but it does not follow that he was never right.
9. *Bull. Inst. Hist. Med.*, vol. 4, 271-97, 1936.

10. See the partial edition by Edouard Blochet (Gibb Memorial Series, 2 vols., Leyden, 1910-11).
11. E. Blochet : Musulman painthlg, XIIth-XVIIth century (London, 1929), pl. LI, LIX, LX, LXI.
12. *Picasso, forty years of his art*, 2nd ed., edited by Alfred H. Barr, jr., issued by Museum of Modern Art (New York, 1939, p.11).
13. *Reality* (p. 272, London, 1926).