

Eighteenth Century Medicine in America

BY RICHARD H. SHRYOCK

ONE sometimes wishes that the history of our early medicine had been recorded by the patients, rather than by physicians or other learned gentlemen. Those who were ill in Colonial days underwent stern experiences. They were first exposed to the pharmacopeia—no mean hazard in itself. Dr. Holmes later described this situation by observing that:

They died!

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The mines have been emptied of their cankering minerals, the vegetable kingdom robbed of all its noxious growths, the entrails of animals taxed for their impurities . . . and all the inconceivable abominations thus obtained thrust down the throats of human beings.

In combination with such dosings, the Colonial patient was subjected to the age-old depletion procedures—bleeding, sweating, and the like. If all this was of small avail, there was no telling what bizarre expedients might be employed. Cotton Mather, in writing to Dr. John Woodward of the Royal Society in 1724, reported the following case history:

The wife of Joseph Meader . . . had long been afflicted with that miserable *Distemper* known as the *twisting of the guts*. Her physician advised her to swallow a couple of *Leaden Bullets*; upon which after some time, her Pain was abated and the use of her Limbs returned to her.

Wentworth before the

But, added Mather, “attempts to *swallow Bullets* have not always terminated so well.” He recalled a case in which the bullet entered the lung, and added sagely enough: “From which and from other unhappy Experiments, I think, I should endure abundant, before I tried such a remedy.”

Upon first encountering such practice, one wonders how our ancestors of only two centuries ago could have submitted to it. Of course, they wanted to believe that it was "good for what ailed them;" and this faith was often sustained by recovery—by the *post hoc, ergo propter hoc* fallacy. But to the modern reader, there seems at first glance no rhyme or reason in that complex thing which was eighteenth century medicine.

First glances are superficial, however, and it is well to look into the matter with more care. Upon further examination, this medicine will be found worthy of some respect; not only as a part of the culture of the times, but because it was in a real sense the precursor of present science. It was in the eighteenth century that the foundations of modern medicine were established; and if American medicine illustrates only the difficulties experienced in laying these foundations, it is still a part of the larger story.

In discussing early American medicine, one must keep in mind (1) the nature of European medicine during the seventeenth and eighteenth centuries, and the means by which this was transmitted to the Colonies, and (2) the social and intellectual circumstances in America which impinged upon medicine once it was established here. For the sake of clarity, the analysis may be broken down into the conventional categories of the history of the public health, of professional institutions, of science, and—last but not least—of medical practice.

The public health in seventeenth- and eighteenth-century England was nothing to boast of from the modern viewpoint. We all know that the country was ravaged by serious epidemics, notably of smallpox and of the plague. It is a truism that death rates were relatively high and life expectancy at birth correspondingly low. One aspect of the transit of Europeans to America which is not usually exphasized, is

not in 18th century

What diseases did Americans
acquire from Indians?

the fact that they brought with them all their more or less domesticated diseases. Once on this side, moreover, they engaged in a free exchange of their infections with those of the Indians and Negroes; with the result that America served as a melting pot for afflictions heretofore peculiar to three separate continents. This fact helps to explain the toll taken by epidemic diseases among the Colonial populations of all three races. The Indians suffered most; so much so, indeed, that their resulting mortality probably made easier the European occupation of our North American seaboard.

Since few specific diseases were recognized prior to 1800, it is difficult to identify those which harassed the Colonies before that time. The evidence indicates, however, that malaria and the usual respiratory and intestinal infections were responsible for most of the tragic reports in Colonial sources. The most feared epidemics were those of smallpox and diphtheria (European in origin) and of yellow fever (probably of African origin). Why plague failed to make the Atlantic passage is not clear. There were also serious endemic conditions of a non-infectious character, such as scurvy—a reminder of the dietary deficiencies of our ancestors.

Threatened by ever-present illness, Europeans turned for protection to their folk medicine, to physicians, and to the major institutions of Church and State. Certain of these protective patterns do not concern us here, but it should not be forgotten what a role they played in the actual practice of the masses. In the ordinary vicissitudes of illness, the Colonial as well as the English family looked to its folk lore; which involved a blend of home remedies, astrology and other occult practices, and (in America) of notions taken over from Indian "medicine men." They also turned to prayer; a practice which, in one's more cynical moments, might be termed theological prophylaxis and therapy. Yet, apart from the human sympathy which may be accorded this

behavior, who can be sure that their faith—whatever its rewards—did not at least have some of the merits now ascribed to psychosomatic medicine?

Governments, in their effort to protect the public health, were handicapped by the state of contemporary medical science. Since epidemics occasioned the chief fear, it was against them that officials took action. Medicine had inherited two theories as to the transmission of epidemics: (1) that these were carried by airs, waters, and food and therefore called for sanitary controls; and (2) that they were transmitted by contagion and therefore indicated isolation, notification, and the destruction of animals. Orthodox medicine tended to uphold the classical emphasis upon sanitation, which was revived during the Renaissance and led in Elizabethan England to the adoption of a respectable sanitary code. This was reflected in Colonial towns by sporadic efforts at street cleaning, inspection of foods, and the like.

Popular feeling, however, leaned towards the medieval contagion theory and was reinforced between 1650 and 1750 by experience with plague and with smallpox. As a result, governments introduced port quarantines, isolated homes, ordered the destruction of animals during epidemics, established pesthouses, and so on. All of these practices were resorted to in Colonial towns, which sometimes even enforced quarantines against neighboring communities.

Town and county authorities in the Colonies also had to assume, against the background of the Elizabethan poor laws, responsibility for sick paupers. Various devices, such as outdoor financial relief or boarding out with the lowest bidders, were employed. The insane were the most troublesome problem here. Boston provided indoor relief in the form of an almshouse as early as 1665; and in 1732 the Philadelphia Almshouse set up an infirmary which in theory

provided "state medicine" to the poor. In practice, however, the care given in this and other early institutions was merely custodial in nature. The same was true of the sick who were isolated in town pesthouses.

Since the main defense against disease was resort to private medical practitioners, governments had long been looked to in Europe for some control over this professional personnel. The authorities, in turn, sought the advice of professional organizations in matters of education and licensure. In the England of 1700, the London College of Physicians was authorized to control licensing. This elite body limited its certification to the graduates of Oxford and Cambridge, and so never approved enough men to meet the needs of a tenth of the population. The consequent vacuum was partly filled by licentiates of the apothecaries guild, and by the 1700's apothecaries made up the ranks of ordinary practitioners. Surgeons, overseen by the Surgeon's Guild, were viewed as an inferior group in comparison with the licensed physicians. Since there was no real interference with all sorts of irregulars and quacks, these various forms of licensing meant little in practice.

Hence it is not strange that, in the distant Colonies, governmental control over medical practice almost disappeared. There were occasional acts which reflected the tradition of licensing; for example, the Massachusetts law of 1649 which limited practice to those approved by "such as are skillful in the same art," or by "at least some of the wisest and gravest then present." In the nature of the case, such regulation was vague and ineffective. Most Colonial legislation or court action concerning physicians related to the size of fees rather than to the quality of service.

Some English physicians, including a few university men, came to the Colonies in the 1600's, and introduced the rudiments of respectable practice. Thereafter, the more ambi-

tious students "read medicine" (which was all that was done in the English universities) and apprenticed themselves to older practitioners. Others, who had a flair for the art or were inspired by selfish motives, simply launched themselves into practice. Not until after 1700, did any number of provincials go abroad for formal training. All degrees of reliability were thereafter represented in the Colonial setting; from that of men holding the M.D. from Leyden or Edinburgh, down to the pretense of the most outrageous quacks.

The concept of licensing was never entirely forgotten, and there is evidence that it eventually attracted some support. During the 1760's, New York became the first province to set up a council to license physicians—a body which, incidentally, contained no member of the profession. There is no evidence, however that, this effort—or that of a number of other states during the ensuing half century—was really effective. The general state of things was outlined in the remarks of a New York critic who declared, just before the Revolution, that:

Few physicians among us are eminent for their skill. Quacks abound like locusts in Egypt. . . . This is the less to be wondered at, as the profession is under no kind of regulation. . . . Any man at his pleasure sets up for physician, apothecary, and surgeon. No candidates are either examined or licensed, or even sworn to fair practice.

Against this background, occasional practice by clergymen was not surprising and probably had its merits. Ministers were frequently the only ones who could "read medicine," since before 1700 the greater part of the literature was in Latin. Clerical practice survived incidentally in rural areas well into the eighteenth century—as it did also in England—and traces can be found as late as 1850. Rural conditions in the Colonies also had the effect of imposing all functions upon the general practitioner, so that English

distinctions between physicians, surgeons, and apothecaries disappeared.

The lack of a well-trained and licensed profession in the Colonies is usually ascribed to isolation and primitive surroundings. But it must be recalled that English conditions were little if any better. One may therefore attribute the situation in some degree to a lack of respect for medical learning. It was only in large towns that a European degree became an asset after 1700, and it was in these centers that ambitious doctors founded medical institutions both to aid practice and to improve their own status. Philadelphia affords an excellent illustration of these developments between 1750 and 1800; where in imitation of London precedents, leading physicians established the Pennsylvania Hospital, the first native medical school, and the College of Physicians. Patronized by prosperous families, these men acquired wealth and so commanded respect for their social position as well as for their professional standing.

This was not the equivalent, however, of awe for medical learning. The impulse behind the founding of the first hospitals was not primarily a desire to bring medical science to the masses—this, such as it was, could be secured at home. Men sought rather to provide decent care of the poor in terms of charity and of humanitarianism. The truth is that the medical science of the time was unable to guide practice into any more effective channels than those followed by any clever empiric. Exceptions need to be made only in the cases of surgery and of obstetrics. The learned physician was actually more dangerous to his patients in some ways than was the self-trained man. In view of these circumstances, it is not surprising that the masses saw little difference between doctors of one sort or another.

What, then, was the nature of this eighteenth-century medicine which reached Americans through Latin and Eng-

lish texts, through the *Transactions* of the Royal Society and the early British medical journals, and through direct training in European schools? There is no more complex period in the history of medicine: it may be interpreted, with equal regard to the sources, as an era of lingering medievalism or as an epoch of progress. Perhaps we may characterize the century, as historians are apt to do with any confusing interval, as an era of transition.

In many respects eighteenth-century medicine was far removed from the medieval. Metaphysical perspectives had been discarded, and occult elements had largely disappeared from practice. Although Hippocrates and Galen were cited by physicians, this was because the classic literature still had something to offer; and there was no longer much veneration for authority as such. The respect for original observations which had been inculcated by Bacon was further encouraged by British philosophic empiricism associated with Locke and later with Hume. Precept was closely associated with achievement; the record of eighteenth-century medical investigations was no trivial one. Without reviewing all the various lines of development, let me call attention to one major trend in research which was to lay the foundation for medical science as we now know it.

It is often said that the revival of the Greek anatomic tradition during the Renaissance was the starting point of modern medicine. Actually, it was the combination of this revival with the introduction of new methods of observation (not, themselves, primarily of classical origin) which made all later progress possible. I refer to experimentation, to the use of instruments for aiding the senses, and to quantitative procedures. It is unnecessary to labor the value of experimentation and of measurements in the physiologic research of the seventeenth and eighteenth centuries. One need only recall Harvey and Haller in this connection.

There was little concern about physiologic experimentation in America until Rush encouraged it for a brief time among his students during the early national period. Sporadic interest in experimenting in other fields had appeared earlier than this, however, as in the chemistry of Winthrop the Younger or the immunology of Boylston and Cotton Mather. The latter, moreover—whom I would seriously suggest was the first significant figure in American medicine—employed quantitative procedures in demonstrating the value of inoculation. His figures became a part of the data on which was based the later development of the calculus of probabilities.

Immunology, however, was largely empirical at this stage and was tangential to the major trend in research. This was the continued study of anatomy, a knowledge of which was essential to physiology. But quite apart from this, anatomic investigations revolutionized the concepts of pathology and with these the whole approach to problems of disease. Here one should recall that, along with a sound tradition in anatomy, the moderns had inherited from Greece a speculative pathology in which illness was ascribed either to impurities in the body fluids (the humoral theory) or to conditions of tension in the vascular and nervous systems.

This type of pathology involved little recognition of distinctions between different forms of illness. Although a number of distinct diseases had long been known because of their obviously peculiar symptoms (skin infections, "consumption," gout, and so on), most forms of illness were not recognized as specific and were treated as involving only a state of the body "system." The chief concern was to find cures for these generalized conditions. The humoral theory indicated the common depletion procedures (bleeding, sweating); while the tension thesis called for the use of stimulants and narcotics. The therapy of both schools was rein-

Winthrop

forced by the employment of the traditional pharmacology—an accumulation in which a little sense was imbedded in a great mass of nonsense. Although there was much talk of the effect of each drug or concoction upon the humors or upon tension, most of these materials were actually of empirical origin and their employment was simply added to depletion procedures for good measure.

This sort of therapy was followed in the Colonies as in Europe, and it was not only ineffective but involved real danger. The more enthusiastic a practitioner was about his pathologic theory, the more was he apt to carry it to logical extremes in heroic practice. Lacking a concept of specific diseases, practitioners could not even recognize the few specifics which had been stumbled upon. Because cinchona bark clearly aided in some fevers, it was tried in all. Whereupon some physicians decided that, since it was supposed to be good for everything, it was really good for nothing.

The speculative pathology not only confused ordinary therapy, but also blocked any development of major surgery. If illness was located in impure body fluids, there was little that surgery could do in the nature of the case. After all, one cannot operate on the blood. Hence surgery remained until after 1800 a matter of superficial emergency measures, such as amputations and the treatment of fractures. Yet the knowledge of anatomy and the instruments necessary to major surgery were available long before this time.

There was no way out of this maze until pathology could be made a natural science. Instead of inquiring what would cure diseases, men must first learn what the diseases were. For only when distinct forms of illness were identified, could one look for their specific causal factors—which would in turn provide clues for their specific cures. Yet the hope of finding immediate remedies was a natural one: it was shared alike by suffering patients and by busy doctors. At this

Lack of success in surgery }
 O.K. details to family therapy }
 but probably due to poor concepts of }
 because of shock & infection.

point one encounters an important social influence. The only men who investigated disease were practitioners: there were no scientists who, as in astronomy, could give themselves primarily to research. And just because they were practitioners, physicians who attempted investigations were pressed for time and asked the wrong questions of Nature.

Fortunately, however, a few medical men of the seventeenth century realized—for reasons not entirely clear—that diseases must be discovered before rational cures could be found. Sydenham, for example, gave an impetus to the study of diseases as such. Unfortunately, these at first could be identified only by symptoms (as we still do with the common cold), and symptoms were endlessly confusing. Here, at last, the anatomic tradition began to bring order out of chaos. For the study of normal anatomy led, by internal logic, to the investigation of pathologic anatomy. And by 1760, Morgagni of Padua made it clear that this structural, localized pathology—correlated with symptoms—would yield an identification of specific conditions. Observations made at autopsies, correlated with the antemortem, bedside data, began to break down such vague, symptomatic notions as “inflammations of the chest” into the specific concepts of bronchitis, pneumonia, pleurisy, and so on. Eventually, these distinctions made possible a search for distinct causal factors: a line of development which was successfully exploited by medical bacteriology during the ensuing century.

The significance of research in pathologic anatomy seems never to have been realized in eighteenth-century America. The ideas behind it were doubtless noted in the Colonies by a few individuals who read European works; indeed, the matter was in part explained by Dr. Thomas Bond in a famous lecture at the Pennsylvania Hospital in 1766. But the occasional autopsies performed in American towns re-

flected only a fear of foul play or a medieval-like curiosity about things in general. Language barriers may have had something to do with the prevailing indifference to Morgagni's work. Perhaps, also, the pragmatic outlook of Americans played a role: pathologic anatomy offered no immediate aid to practice. The busy American doctor wanted therapeutic short-cuts, and had no time for a meditation on the circumstances of death.

Meantime, even before pathology began to identify diseases, there was some speculation as to the causal factors (etiology) of such conditions as were recognized. Here the Greek tradition ascribed much illness to poisons or miasms circulating in the air—the theory upon which their sanitation was predicated. But a new instrument of observation—the microscope—had introduced observers after 1660 to the world of the animalculae. A few men suspected that these little “insects,” gaining access to the body, might be the causes of disease. The theory could not be proved in the 1700's, not only because microscopes were imperfect but also because the diseases which would have been checked in this connection were not yet clearly recognized. But speculation and attempted demonstration had meaning: they kept the idea alive until it could be made workable, and occasionally suggested a rational approach to practice.

Did this promising “germ theory” reach the American Colonies? Until recently, we would have doubted it. As far as I know, no prominent physicians so much as mentioned it in the eighteenth century. It is therefore surprising to find that the whole animalcular theory was calmly accepted by none other than Cotton Mather as early as 1723. I am indebted to my student, Mr. O. T. Beall, for this knowledge of Mather's views;¹ as contained in the latter's unpublished manuscript, *The Angel of Bethesda*, which was

¹ Mr. Beall plans to proceed with a thorough study of Mather's medicine.

Mather did not believe in it himself
for very long

kindly made available by the American Antiquarian Society. Mather, to be sure, combined this new concept with much of the old speculative pathology. But he viewed the animalcular hypothesis as a most promising one; and, in addition, had some notion of its implications for medical practice. Incidentally, the *Angel*—rarely noticed heretofore by medical historians—seems to have been the first systematic treatise on medicine ever prepared in this country.

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Several questions immediately occur. Why was this pioneer American work never published? Failing publication, did it exert any influence? And why was it a theologian and historian, rather than a physician, who prepared this study and who accepted a new theory of etiology a full century before any medical men seem to have done so?

The failure of Americans to participate in the investigation of either pathologic anatomy or the "germ theory" simply reflected their indifference to medical research in general. There were a few notable exceptions, such as the experiments in immunology at Boston with which Mather was associated. But it is remarkable how seldom original studies were undertaken, even by the faculties of the first medical schools. Benjamin Rush lost his interest in experimental physiology and chemistry, after having picked it up at Edinburgh. Dr. John Morgan, of the College of Philadelphia, visited Morgagni at Padua but was not inspired to attempt pathologic studies. Indeed the only American who made serious contributions in pathology, William Charles Wells of Charleston, did his work after fleeing to London as a loyalist. He shares with Franklin and Benjamin Thompson the top honors in Anglo-American science, and was in my opinion as versatile as either of the other two in scientific matters. Not only did Wells do basic work in physics and in medicine, but in an odd moment he tossed off the first known presentation of the Darwinian theory of biologic evolution.

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The very fact that these leaders all worked for years in London, suggests that the European center provided stimuli which were rarely present in the American setting. There is no need to explain this contrast here, so far as science in general is concerned, other than to say that it was not simply the result of pioneer conditions on this side. The explanation is more complex than that. But it is, in any case, a mistake to confuse professional progress in eighteenth-century American medicine—which certainly took place—with scientific advances. Boston, New York, and Philadelphia could boast by 1790 of medical institutions comparable to those of London, but no such research was under way in them as was being cultivated in the metropolis.

Although Americans rarely participated in research, they had no difficulty in becoming involved in the confusions and uncertainties of the medical science of that era. This is the other side of the eighteenth-century story. The traditional controversy in speculative pathology related to the humoral versus the tension theory. The influence of Boerhaave at Leyden at first encouraged the humoral tradition among Americans; but Rush later revived the tension theory with vigor. In therapy, men had long been divided between those who advocated leaving cures to Nature and those who demanded interference with Nature. The Dutch influence early in the century promoted some reliance on Nature and correspondingly mild treatments; while Rush and his followers later came to distrust Nature and to demand heroic treatments. From the present viewpoint, American therapy thus went from bad to worse between 1750 and 1800.

A disconcerting phenomenon of this age was the manner in which objective advances in physical science seemed only to revive and complicate speculation in medicine. Thus Newtonian physics, which had systematized dynamics and astronomy, encouraged physicians to go and do likewise

in physics. But the only "systems" they could find were the revived pathologic speculations, which represented so many short-cuts across fields of yet unrecognized complexity. The prestige of Newton's physics also encouraged some to urge that all medical problems could be solved by mathematical or physical approaches. This iatro-mathematics had American advocates in Mather (interesting, in a theologian) and in Cadwallader Colden of New York. Mather, who denounced uncertainties and disagreements in medicine as roundly as would Jefferson nearly a century later, urged that the causes and cures of diseases be sought "mathematically" by a study of the "*Laws of Matter and Motion.*" While there was a sound instinct in this advocacy of quantitative procedure, it was of little help at the time; and meanwhile it involved a debate with those who held that biologic phenonema were too complex for quantification.

Related to this issue was the controversy between the vitalists and the mechanists; for the vitalists were inclined to minimize quantitative methods, and the mechanists to favor them. The most active center of the debate was at the University of Halle (1694), where Stahl was the champion of the vitalistic "sensitive soul," and Hoffmann the advocate of a mechanistic conception of the body. Actual research on nervous mechanisms (promising in themselves) only encouraged Hoffman to ascribe illness to tensions—in other words, to revive this ancient type of pathologic theory. Hoffmann influenced Cullen at Edinburgh, whence Rush brought the thesis to Philadelphia after 1765. The latter subsequently elaborated it into the most popular and also most dangerous "system" in America. In order to overcome tension, he urged that a patient sometimes should be relieved of three-fourths of all the blood in his body!

Here, again, we have what was in a sense retrogression. It will be noted that German influence on American medi-

cine was largely indirect; although a few German doctors came to the Colonies, and various Americans read German works either in Latin or in the vernacular. Only Pennsylvania was directly influenced by German theory or practice. This is well illustrated in the person of Henry Melchior Muhlenberg. Trained at Halle in the days of Stahl and Hoffmann, Muhlenberg avoided extreme support of either of their theories; though his emphasis upon psycho-somatic relationships suggests the impact of Stahl's vitalism on his thought. Coming to America in order to organize the Lutheran churches, the German leader found time to practice medicine on a considerable scale—employing the remedies of Halle in combination with religious exhortation. His approach was different from that of earlier clerical physicians, however, since his university training had introduced him to the spirit of the *Aufklärung*. He rejected crude empiricism and the occult, and practiced only in the absence of those whom he considered as qualified physicians.¹

A final illustration of the way in which sound investigations often confused medical thought before 1800, is afforded by Rush's advocacy of a tension pathology. It was actually the early effort to identify specific diseases—so desirable in itself—which led him to revert to this ancient speculation *via* Hoffmann and Cullen. For early identification, as noted, was based upon symptoms alone; and these—with their innumerable combinations—had led by the 1780's to lists of over 1500 so-called diseases. Rush decided that order could be restored here only by reverting to the other extreme, in holding that there really was only one disease; that is, an all-pervading hypertension in the vascular system. He failed, as did his compatriots, to see that there was a middle way out of the maze—the correlation of symptoms with pathologic findings which has been mentioned.

¹ I am indebted to my student, the Rev. Mr. W. E. Fisher, for this data on Muhlenberg.

Various other examples of the medical confusion caused by even valid research could be cited; for example, the controversy over the relative values of acids and of alkalies as drugs, which was occasioned by studies in chemistry. The truth is that medicine, as already suggested, was unable to use effectively the scientific developments in physics, biology, and chemistry—or the improved methods which made these possible—until it had first discovered with what it was dealing. Its primary subject was human illness, and this was a far more complex phenomenon than were those handled by the physical disciplines. All biologic sciences must first go through a taxonomic stage, since their data must be put in order before they can be employed in research on an analytic level. In botany, this was a matter of identifying and classifying species; in medicine, it involved discovering the diseases. Prior to this, physicians could only accept unverified theories; yet on these theories they based a practice which affected the very lives of the entire population.

Notice that it was again a social factor—the fact that patients could not wait for a sound science—which made it impossible to pursue the internal logic of medicine in an orderly manner. Botanists could postpone theories about the origin of species until a large number of these had been found; but physicians must have their pathologic theories at once if they were to attain any rational approach to practice. Under these circumstances, objective studies in physical science or even in special branches of medicine only enlivened speculation. This was the general picture of American medicine in the eighteenth century. Fortunately, amidst all this confusion, a few Europeans continued the pathologic studies which eventually provided medicine with a sound taxonomy. Such research was on the right track by the end of the eighteenth century; but few physicians—and practically no Americans—were even aware of this.

We should not be too severe, in retrospect, in judging the Americans on this score. All of them were immersed in practice and were handicapped, in addition, by the demand for immediate, practical results which has been noted. Perhaps we should recall the better practitioners as men who were at least devoted to their patients and to their art, and who—in the larger towns—labored successfully to improve the status of their guild. These achievements would prove of value even to future science; since when European research was later imported to these shores, it was essential to have here a profession capable of making the most of it.

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