CONTEMPORARY REACTIONS TO SMALLPOX INOCULATION
IN EIGHTEENTH-CENTURY FRANCE

by

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ABSTRACT

The purpose of this study is to examine the medical, religious, and social reactions to smallpox inoculation in French society and to analyze the nature of the controversy and the dominant part played in it by the learned community and medical profession of France as it took shape in the general context of the eighteenth century. The approach has stressed those aspects of the social history of medical ideas and practices and of the social history of contemporary thought which seems to make sense of the important discussions over inoculation.

Although strictly speaking the controversy over inoculation did not cease at any point in the eighteenth century, the most important discussions took place between 1714 and 1775. Therefore, the present study will not deal with events after 1775 during which time the practice of inoculation became accepted, though not universally established, in France. It is important to note the period under discussion marked a crucial phase in the history of the Enlightenment in France, for the campaign on behalf of inoculation then assumed many of its special characteristics. Certain key developments occurred which provide the framework
of this study. The first is concerned with the safety of the methods and development in their techniques during the course of the eighteenth century which helps to explain the motives and timing for the general acceptance of smallpox inoculation. The second deals with the social, religious, and medical responses to inoculation in the early eighteenth century. The fear that partial inoculations of only some members of the community would spread the natural form of the disease to the rest was the principal reason which accounts for the prohibition of the practice during this period. The third deals with three of the most important aspects of the controversy. Firstly, the growing interest of "enlightened" governmental authorities and medical men to extend the practice to the suffering masses as well as the interrelated measures of public health and hygiene; secondly, the tendency to abandon traditional religious and medical values and to substitute for them a new way of thinking based on probabilistic formulations of comparative mortality rates of inoculated and natural smallpox cases; and thirdly, the relatively high price of inoculation and the reluctance of medical personnel to spread inoculation to the French population as a whole.
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INTRODUCTION

The purpose of this study is to examine the medical, religious, and social responses to smallpox inoculation in French society and to analyze the nature of the controversy and the dominant part played in it by the learned community and medical profession of France as it took shape in the general context of the eighteenth century. Although strictly speaking the controversy over inoculation did not cease at any point in the eighteenth century, the most important discussions took place between 1714 and 1775. Therefore, the present study will not deal with events after 1775 during which time the practice of inoculation became accepted, though not universally established, in France.

I

In recent years, the historian of early modern Europe has become increasingly fascinated with medicine and disease. Although defined in various ways, the history of medicine and disease is distinguished from other fields of specialization by its concern with health-related problems and recently with describing the complex relationship between disease patterns, socioeconomic structure and environmental conditions. To a considerable extent, the goal
is to redress the imbalance in medical history which has been traditionally limited to studies which in general emphasize the internal development of medicine. The demographer attempts to employ quantitative research techniques with the goal of avoiding generalizations that rest on impressionistic evidence, and is receptive - at least in theory - to the systematic testing of broad conceptual hypotheses developed in the social and behavioral sciences. A growing number of demographic-related works have focused on infectious diseases such as typhoid, tuberculosis and smallpox, as well as a vaguer group of chronic infections - grippe, dysentery and pneumonia - which appeared sporadically and periodically throughout Europe between the seventeenth and nineteenth centuries. In fact, these infectious diseases were capable of affecting the size and structure of the population and were so devastating that they are now considered as pressing a topic as the experiences of the plague between the fourteenth and sixteenth centuries. Hence, the demographer's hope is to illuminate the history of population changes of a given society by means of explaining the ways in which mortality and morbidity patterns changed over time.

The social historian, on the other hand, is distinguished by his concern with describing the precise nature of socioeconomic structures as well as the complex relationship between disease patterns and environmental
conditions. Hence, the goal of this new field of social history is two-fold: firstly, to break down traditional disciplinary distinctions; and secondly, to create a new and unified way of understanding the totality of human activity within a given society or geographical region. By adopting a multidisciplinary approach, the social historical can now concentrate on such key issues as the changing incidence of disease, its impact upon society, the manner in which people respond to health-related problems, and the ways in which morbidity and mortality patterns are related to environmental, nutritional, economic, technological, and medical factors. There is every reason to believe, therefore, that social historians will increasingly turn their attention to health-related problems in much the same way they began to examine the relationship between ideology and social structure, childhood experiences, family history, and morbidity patterns.

It is clear that the extensive and important body of the more traditional history of medicine stressed the assumptions and objectives of medical men, their approaches to disease, their methods and the progressive development of particular patterns of thought in the treatment of disease. To a large extent, the internal history of medicine leads to an emphasis on the role of key individuals, or the evolution of beliefs and ideas regarding given disease entities. In this sense, the goal is to explain how certain concepts and ideas developed and how they changed over time.
For our purposes, it is necessary to provide a general discussion of medical thought and theories of disease to illustrate the strengths that arise out of adequate knowledge of the internal history of medicine as distinguished from the external factors that influenced the medical profession. By the late eighteenth century, medicine was influenced by the prevailing emphasis on a classification of diseases which could be derived from the collection and analysis of particular facts. The underlying assumption was that diseases had a natural and independent existence apart from the subjective perceptions of the human observer. Hence, the goal of nosological medicine was two-fold: firstly, to give unambiguous definitions of diseases; and secondly, to show the relationships and inner nature of disease states with similar characteristics. Doctors developed a nosology based on external symptoms and defined pathological states by describing them in terms of external and visible symptoms. This process was inevitable, because neither technology nor theory could establish a relationship between biological mechanisms and external symptoms. In fact, a classification system based on external symptoms created serious intellectual and "scientific" problems. Was fever, for instance, one disease state or many? While often disagreeing on specifics, few doctors questioned the practice of defining disease by observing symptoms. At the time no other alternative was available.
Although it is to some extent true that this approach may have, at least from the viewpoint of the new social history, certain shortcomings, it also possesses certain strengths, an understanding of which is indispensable for further work. Hence, any serious work on the social dimensions of medicine and disease must begin with a firm understanding of the evolution of a medical theory, if only because primary sources reflect a particular generation's understanding of pathological processes.

The traditional stress on the internal development of medicine and disease has recently been widened in scope and range to deal with the relationship between states of health and society. The significant studies, as we shall see, have attempted to analyze such themes as morbidity and mortality patterns in relation to environmental, nutritional and economic conditions, popular attitudes toward illness and disease, the origins of public health, and the emergence of government and medical interventionist policies which sought to minimize the pathological processes. Specialists in this field have an obligation to study the interplay between external and internal factors in writing about the history of medicine and disease.

Since the social historian has become preoccupied with the role of population growth, environmental conditions and socioeconomic structure in their relationship to infectious diseases, he has developed a sophisticated understanding of some of the underlying issues. One such
important book is Médecins, climat et épidémies à la fin du XVIIIe siècle edited by J.P. Desaive with contributions by a team of French scholars whose earlier demographic, climatological and other related writing are well known.  

The major contribution to the volume is the joint chapter by Emmanuel Le Roy Ladurie and Desaive. It rests on the records of the medical and meteorological sciences of the late eighteenth century, providing a systematic analysis of each French region, with the most sophisticated computer program techniques available. Moreover, they point out several other important areas of research. They tell us something, for example, about the seasonal fluctuations and sequence of harvests during the period under discussion. The account here corresponds in several details with what Ernest Labrousse, Michel Morineau and others have noted on the price cycles of the time. Short-term meteorological evidence may offer clues to the grouping of harvests in periods of good and bad years. The relevant data, however, are certainly far too disparate and imprecise to allow more than tentative conclusions. They have generalized cautiously from certain weather stations whose records are relatively detailed. They have claimed that cold, wet summers brought poorer harvests, like the ones of 1783-4, 1784-5, and 1788-9, which may help to explain why the Revolution came when it did. Indeed this evidence merits serious consideration. The question which remains, however, is whether or not the
sources do in fact tell us something about the complex relation between good and bad crop years, socioeconomic, cultural and demographic factors, and disease patterns.

The studies by Jean Meyer and J.P. Goubert give solid evidence to help explain why Brittany did not conform to the national norm of relatively rapid population growth in the late eighteenth century. In the period from 1770-84, while it is generally agreed that the French population as a whole increased by almost 6 per cent (excluding migrations), that of Brittany decreased by 3.7 per cent. Other figures show a decrease of 4.5 per cent over the period 1770-87. According to both studies, it is clear that the frequent recurrence of epidemics such as typhoid, dysentery and smallpox were a major cause of the "demographic crises" there.

Meyer and Goubert have also pointed out that the problem of epidemics was worsened by widespread popular indifference towards even elementary hygiene. Besides contact with infected people and contaminated water supplies, the two most common ways in which contagion spread, germs were often transmitted from animal husbandry to human beings, for instance, through their waste. More sanitary forms of sickbed vigils and burial were slow to come. In addition, the potato was considered to be an inferior foodstuff to buckwheat (sarrasin) as well as a number of cereal compounds whose nutritional value was limited but which formed the basis of the rural popular
diet. This may be the most important single reason for the epidemics which afflicted the Brittany populace relentlessly - in 1739-41, 1747-49, 1758, 1764-65, 1770-75, 1779, 1782-83, 1786 and 1788. The widespread under-nourishment of the rural populace meant that resistance was relatively low at the best of times which undoubtedly contributed to population decline in certain regions. When crisis struck, the first to succumb were usually young children, the aged, and the frail. All of these combined to increase the incidence of diseases that devastated the population.

J.P. Peter's article was principally directed towards the study of diseases, though the latter section focused on the role of environmental factors in relation to disease in rural society. The medical analysis, however, has some speculative points on the subject of psychiatric definitions of disease. For example, Peter stated:

A frightening encounter with disease, personal troubles, fear - all of these often evoked responses of the same type, namely, convulsions and even paralysis. These reactions had strong hysterical overtones. In our time these reactions are different. They are more apt to be depressive or schizoid; although the sociological phenomena connected with rock n'roll seems to indicate a return to the first responses of the former type: collective hysteria. This is the first sign of a mutation brought about by our mass society.

This explanation is too present-minded. If physiological processes are responsible for emotional disturbances, we
cannot identify them. Nor is it possible at present to specify the role played by either genetic or environmental factors in producing what is designated as a mental disease.

Yet, in dealing with the relationship between health and environment, Peter has demonstrated an understanding of some of the central issues. For example, he has focused on the role of environmental factors in relation to living patterns. In this connection, Peter has pointed out the construction of crude dwellings without adequate ventilation or lighting; the lack of intensive cultivation which brought about drainage problems; the large pools of stagnant water in a community; the likelihood of epizootic diseases; and the high level of malnutrition which probably decreased resistance to diseases such as typhoid and smallpox. All of these factors combined no doubt to increase the incidence of disease throughout rural France.19

The evidence supplied by Desaive and his contributors was not alone in stressing the mutual interdependence of disease patterns, environmental conditions and socio-economic structures. In Les Hommes et les morts en Anjou aux 17e et 18e siècles, François Lebrun traced the interrelation between social and religious values on the one hand and attitudes toward illness, health, disease and death on the other. Moreover, he argued that Anjou, like other west coast provinces, was economically "backward", and did not encounter an increase in population due to
recurrent famines and epidemics in the late eighteenth century.

In his detailed analysis of the causes of death, Lebrun, too, established very clearly the dominant part played by malnutrition and poor hygiene. If doctors had some success in dealing with epidemics towards the end of the period, it was because they too saw these basic facts. Their treatment consisted to some extent of keeping the suffering masses clean and adequately fed. Lebrun also showed how the appearance of an epidemic would destroy even family bonds, and allow the victims to be buried in mass graves in unhallowed ground. In fact, the population as a whole seems to have cared more about religion than medical attention at the moment of death. This was part of an extremely traditionalist mentality which preferred the remedies of the local "empiric" to the "rational" prescriptions of the doctor.

Similarly, J.P. Goubert in a recent work showed how the prevalence of epidemic and chronic diseases was a result of environmental and cultural patterns, and how the Breton population's response to disease was conditioned by their socioeconomic structure.

Another important health-related problem which we have only touched upon is the possible consequence of illness, namely, death. This is not to suggest that every disease leads to death, however, in light of the inadequate medical cures, the loss of health was considered the first
step to death in the eighteenth-century.  

In the interesting study *Western Attitudes toward Death from the Middle Ages to the Present*, Philippe Ariès has suggested that the omnipresence of death from the Middle Ages until the end of the eighteenth century produced a "familiarity with death," "a coexistence of the living and the dead," even a "promiscuity between the living and the dead." This, in turn, led Ariès to speak about a "tamed death" in regard to that era. It may be assumed that the prevalence of illness—the high infant mortality, the mortality of mothers in childbirth, the mortality of people succumbing to epidemics in their prime—led to a familiarity with all forms of ill health. The certainty of death and the fraility of life were at the time quite obvious and commonplace. The suffering masses never thought of escaping or glorifying them. If they were able to interpret death as a kind of acceptance of the laws of nature, this concept with respect to illness was probably not in the forefront. Certainly we would not go as far as Jacques Dupâquier, who speaks in this context of a kind of biologically terrorized population. Even if the historian no longer interprets illness in terms of theology, one must constantly make an effort to confront illness through the eye's of the people who are being studied. For example, Lebrun's view of the seventeenth and eighteenth centuries' experience of suffering and
illness as a mystery is very plausible. Illnesses were willed by God. They represented either individually, or in the case of epidemics, collective punishments for sins committed, or else they represented a warning to make proper preparations for death. The illness of the body was supposed to help the recovery of the soul. Until the mid-eighteenth century when a doctor was consulted, his job was more the ministration of the patient's soul than of his body.

As long as illness was considered an expression of supernatural forces, faith and superstition were closely related. There was only one step from the notion of divine intervention to the idea of the intervention of the devils or demons of disease, from the appeal to the Church to reliance on magic, "empirics" and quacks. Moreover, as long as disease had a magical-supernatural character and little "scientific" interest in seeking the natural cause of illness, there was no reason to be treated by a "rational" doctor or surgeon who tried to offer exact and comprehensible instructions.

The historian of medicine and disease should also turn his attention to an analysis of health care institutions. The hospitals of the eighteenth century were organized to meet the needs of the aged and infirm without family and the suffering masses known as the "sick" poor, who, for reasons of work, depended on good health and could not avoid the hospital or similar charitable organizations.
In his important book *Medicine at the Paris Hospital 1794-1848*, Erwin H. Ackerknecht described the transformation of the doctor/"sick-man" relationship. According to Ackerknecht, in a functioning hospital, the doctor presided over the course of recovery in an authoritarian manner. Moreover, Ackerknecht pointed out the developments of internal medicine such as nosology, localized pathology, physical examination and statistical analysis to illustrate the dramatic structural change of the hospital. Similarly, Michel Foucault analyzed such themes as the emergence of a new role for the "sick-man", that of patient, the new occupational position of the clinician and the major achievements during the late eighteenth century.

N.D. Jewson helps to explain how the transition from "bedside medicine" to "hospital medicine," and the tolerance of authoritarianism was based on a new kind of relation between the "sick-man" and the medical practitioner which represented the first major steps towards the institutionalization of the "sick-man" as an object of study by clinicians.

Although the institution and its staff, the changing practice of medicine, structural differentiation and modes of support are by no means of historical insignificance; the most crucial element, namely, the clientele still requires further work. Clearly, there is much to be learned by studying patients as well as medical practitioners. By using patient records (where they are available), the historian may then be in a position to raise
important questions about the ways in which groups perceived doctors and hospitals, the changing incidence of disease, and differential care and treatment.  

II

So far our discussion has tended to focus on certain problems and prospects of research in the historiography of medicine and disease in eighteenth-century France. To a considerable extent, the foregoing discussion has dealt with the socio-historical approach to key health-related issues such as the changing incidence of disease in various regions of France, the major epidemic and chronic diseases that affected their people, their attitudes toward disease, illness and death, and socioeconomic structures. Directly or indirectly, these issues are closely related to the following health-related problem: namely, the keen and protracted controversy over smallpox inoculation which occurred in France during the eighteenth century.

Within the past twenty years or so, smallpox inoculation in the eighteenth century has attracted some attention, but seldom has its study been analyzed in an acceptable socio-historical fashion. Most of the significant studies, as we shall see, have either a medical- or demographic-related bias. The traditional literature has been preoccupied with the internal development of medicine. To a large extent, the emphasis has been placed on the role of leading doctors, their ideas about disease
and the ways in which they perceived the proper treatment of smallpox. On the other hand, the more recent work has tended to focus on population growth with its relation to the changing incidence of smallpox. Yet, the historian writing about inoculation has shown little interest in undertaking studies of population changes which relate the periodicity of smallpox to environmental, nutritional, economic, technological and medical factors. So far the approaches to the topic have admittedly contained shortcomings. They have confined the historiography of inoculation within narrow boundaries and have made it a subject for impressionistic or statistical study.

Within the past two decades, a number of works have focused on the medical and demographic approach to the historical literature. The first important study was Genevieve Miller's *The Adoption of Inoculation for Smallpox in England and France* (1957). In her introduction, Miller justified her efforts by drawing attention to the fact that "the history of inoculation was written chiefly by physicians, and only brief references occurred in general historical literature." Therefore, Miller attempted to integrate the earlier medical literature within the framework of an intellectual-historical approach to explain how the "non-medical 'scientists'" - at least in England - played a dominant role in the permanent acceptance of this prophylactic measure against smallpox by the mid-eighteenth century.
And yet, the section of the book which deals with the internal developments in France has certain shortcomings. Firstly, though the general conclusions are sound, the account is often incomplete and the facts inaccurate, Miller besides has only a superficial understanding of the source material's language and rationale. For instance, she argues that, "Fear of smallpox was the principal motivating force for inoculation both for its introduction and for its continuance as a valid medical procedure." To some extent, Miller's viewpoint merits serious consideration, but only in the case of England. At no time in France during the eighteenth century did the element of fear lead to the universal acceptance of the practice. In fact, the fear of inoculation infecting healthy people with material taken from a patient with smallpox, the belief in secondary contagion as a result of inoculation, and the reluctance to accept inoculation because it did not necessarily lessen the risk of natural smallpox, all played a significant part in the prohibition of the practice.

Secondly, the discussion of the nature of the controversy and the role played in it by the learned community and medical profession of France principally relates to the logic and theory of medical ideas such as the classical humoral theory set forth by the Arabic doctor Rhazes and his disciples and largely neglects a religious, political, economic and cultural analysis for a fuller understanding.
of the complex problem. In addition, her treatment of the subject serves as a study to compare the "advanced thinking" of the English medical community on inoculation with the "backward" thought in France. More importantly, she is not familiar with such key questions as the growing concern of learned men and medical practitioners over issues focusing on the "public good", hygienic practices, and a safer method of inoculation which are central to an understanding of the motives and timing for the acceptance of the practice.

In the 1960s the emphasis began to shift towards the study of disease incidence which were explored by P.E. Razzell. Using the techniques of historical demography, Razzell concentrated on the decline of smallpox death tolls as a result of inoculation to show how closely related this practice was to the transformations England experienced in both population growth and the intensification of industrial production during the eighteenth century. Razzell's interesting article, however, fails to explain how the contribution of medical influences and improvements in public health account for the population growth in England as a whole. A decline in deaths follow a discernible pattern: rising standards of living, first in food supplies, removal of specific hazards in physical environment, and specific measures of preventing and treating disease of the individual. Hence, it seems unlikely
that the growth of population could be due to a fortuitous decline of mortality from smallpox, an explanation offered by the economic historian in somewhat disguised form by reference to the plague. If these possibilities are excluded, the growth of population must have been due to an improvement in living conditions, whether this led primarily to a rise in the birth rate or a decline of mortality.

P.E. Razzell's latest work, The Conquest of Smallpox (1977), is another demographic approach to assess the decline of mortality due to inoculation in mid-eighteenth century England and in the relationship between population growth and the Industrial Revolution. In so doing, Razzell has argued that, "Smallpox ranks with bubonic plague in its historical importance, and without its gradual elimination, the world's population would have suffered the kind of decimation resulting from the Black Death, and the Industrial Revolution of the late eighteenth and early nineteenth century would not have been possible." This interpretation has been questioned by two recent articles that focus on the smallpox mortality rates in Geneva and Finland during the period under discussion. These demographers have made a case for the negligible effect of inoculation on the reduction of smallpox mortality and have stressed that neither inoculation nor vaccination convincingly explains why the population of Europe began to increase rapidly in the late eighteenth century and to continue its upward movement in the nineteenth century.
The growth of population in England as suggested in Razzell's studies implies that a significant improvement in health began much earlier - at least seventy years before the 1838 national registration of births, deaths and causes of deaths. Hence, the growth of population cannot be attributed to specific medical measures such as deliberate immunization and therapy which can hardly have been more effective in the eighteenth century than the nineteenth. In a period of malnutrition, a relatively low standard of living, and limited advancement in health standards, it seems unlikely that the practice of inoculation led to a reduction of mortality from smallpox to account for the increase of population.

Marc Barblan has focused, in a cursory manner, on the extent of the practice of inoculation and vaccination in a regional context during the late eighteenth and early nineteenth centuries. In the case of inoculation, Barblan has stated:

Il semble bien que, jusqu'à l'introduction de la vaccination, les inoculés - par rapport à l'ensemble de la population, ou aux naissances-ne représentent que quelques cas isolés qui ont d'autant plus frappé l'imagination des mémorialistes ... qu'il s'agissait de magistrats ou de la famille royale, tout au moins de membres de la "upper class." Limitée socialement à l'élite éclairée ou à une fraction de celle-ci, l'inoculation a également été limitée géographiquement.
Unfortunately, Barblan's conclusions are in doubt on several points. Firstly, he does not fully exploit the statistical evidence to clearly illustrate the periodicity of smallpox epidemics, the age incidence and the overall effects of inoculation and vaccination in terms of reduced smallpox death tolls; and secondly, he does not fully develop the popular opposition to inoculation in order to show the limited extent of the practice during the period under discussion.

Until such studies have advanced to the point where their main conclusions are not in doubt, there will remain a serious deficiency in the history of medicine and disease. On the basis of the foregoing analysis, there seems to be some merit in reinterpreting the controversy over inoculation in eighteenth-century France.

But why is it that the French medical profession and learned community seized upon the practice of inoculation in the eighteenth century? To this question, I will suggest several tentative answers. Firstly, contemporaries during this period were unanimous that, "Tous les hommes, sans exception, sont sujets à la petite vérole." Charles-Marie de La Condamine, the celebrated geographer and mathematician, summed up contemporary opinion on the prevalence of smallpox:

Une maladie affreuse and cruelle,
dont nous portons le germe dans notre
sang, détruit, mutilé ou défigure un
quart du genre humain. Fléau de l'ancien
monde, elle a plus dévasté le nouveau que
le fer de ses conquérans: c'est un instrument de mort qui frappe sans distinction d'âge, de sexe, de rang ni de climat. Peu de familles échappent au tribut fatal qu'elle exige. C'est sur-tout dans les villes and dans les cours les plus brillantes, qu'on la voit exercer ses ravages. Plus les têtes qu'elle menace sont élevées ou précieuses, plus il semble que les armes qu'elle emploie sont redoutables: on voit assez que je parle de la petite vérole.  

Unfortunately, statistical evidence on smallpox mortality rates between 1714 and 1775 is unavailable. Therefore, the present study is unable to determine the universality of the disease, the age incidence and the periodicity of smallpox.

Another factor was in the institutional organization of the Académie des Sciences which during the course of the eighteenth century was recognized as the most powerful and professional "scientific" institution in Europe. Unlike the Royal Society in England, incorporated by royal charter but organized as a private society, the Académie des Sciences had been developed as an institution of the state with the "scientific" and technical needs of the state clearly and directly in mind. Since the Académie was sometimes called upon to investigate health-related issues of importance to the Royal Administration, learned men, in turn, attempted to bring about the reduction of deaths from smallpox within the power of the medical profession. Therefore, the historical value of the writings on inoculation contained in the Histoire de l'Académie Royale des Sciences derives from the size and quality of its response to smallpox inoculation.
and in the fact that the reactions coincided with the growing concerns of the Royal Administration. From this mutual interest, learned men began for the first time to focus on the "national good," that is, a healthy and productive population for the benefit of both the state and society, in a statistical fashion.

And why was La Condamine the principal champion of inoculation in France? The answer may lie in several approaches. Firstly, he was a prominent figure in that widespread attempt to apply and extend "scientific" thinking and new knowledge to all segments of society that was becoming a salient feature of eighteenth-century France. Among the would-be Newtons of astronomy, he combined active involvement in social and political affairs with an institutional commitment to "scientific" investigation and a growing professional acquaintance with its methods. In addition, La Condamine began his program for the acceptance of inoculation against smallpox at a time when more curiosity and interest was being shown by learned men in the intellectual, "scientific" and literary developments given to countries outside of France. As a result, he came of age as the most significant and influential partisan of inoculation in this period of French history.

Moreover, La Condamine's conception of inoculation, his view of medicine as a practice to save lives, was therefore not only an informed one. It was also to a considerable extent, typical of the most advanced thought of the time.
It was in the institutional context of the Académie des Sciences, as in the more general context of the philosophes movement, that he developed his views regarding the social reform of medicine and its relationship to the "scientific" organization of society.

Hence, this study is divided into three main parts, one dealing with the safety of the methods and development in its techniques, the second with the fruitless attempt to introduce this medical practice in France, and the third with the keen and protracted struggle for acceptance of the practice by the learned community during the mid-eighteenth century.

Since the problem is complex and the primary data are deficient, it must be said at the outset that the attempt to provide reliable national estimates of smallpox mortality in France, by exploiting the information available on certain key statistics such as the parish registers, are likely to be imprecise, inaccurate and incomplete. In addition, as with all statistics, the way in which they are arranged and interpreted can completely alter the conclusions reached from them; most eighteenth-century writers on this subject, particularly by the mid-century, were supporters of inoculation and used the statistical information to show that smallpox mortality was reduced to a large extent through the practice of inoculation. There is one general problem, however, in attempting to estimate the contribution of any one disease to total mortality,
and that is the indirect mortality which cannot be specifically attributed to that disease.

The approach, therefore, has been to present the controversy over inoculation in as broad a framework as possible, relating aspects of the social history of medical ideas and practices and society in eighteenth-century France. Secondly, I have attempted to elaborate the contemporary thought on the subject by reconstructing what I interpret to be the main outlines of the controversy, the problems posed by medical, religious and social reaction and the intellectual tools at their disposal to answer them. For the most part, each phase of the controversy produced an extensive body of literature as noted in the following learned periodicals: the Jesuit Journal de Trévoux, the Année Littéraire, the Journal Encyclopédique, the Mercure de France and the secular Journal des Savants. Although these standard periodicals opened their columns to review articles on the subject, it must be remembered that these journals were in effect primitive newspapers not systematic literary reviews. But they do provide some insight into the prejudices or biases of each editor regarding the controversy.

Clearly, there are compelling reasons why historians, building upon the work of earlier scholars, should turn their attention to the social history of smallpox inoculation in eighteenth-century France. Hence, the present study has its origins in the failure of recent
historians to deal with the relationship between medicine and society, and changing patterns of thought and group perceptions of smallpox. In fact, surprisingly little is known about the community reaction to smallpox inoculation or the human response to smallpox epidemics. At present, historians have only begun to systematically analyze the sources and nature of group perceptions of the disease in eighteenth-century France.

In short, the justification for the present study is contained in two, related propositions: firstly, it is designed to revise the conventional interpretation of smallpox inoculation by focusing on the medical, religious, and social aspects of the problem; and secondly, this study is meant to contribute, in a small way, to the social history of medicine and disease in eighteenth-century France.
NOTES

1 For a description of how four factors "morbidity," "mortality," "socioeconomic structure," and "environmental conditions" are integrated with a group of further factors derived from a "total history," see J.P. Desaive et al., Médecins, climat, et epidémies à la fin du XVIIIe siècle, (Paris, 1972).


As the contributors say, theirs is "an inquiry into an inquiry." The basic primary source are the proceedings of the medical inquiry which followed Turgot's, the Comptroller-Général, arrêt du Conseil of 29 April 1776. The main aim here was to record the incidence of disease in an attempt to establish connections between climatic conditions and epidemics in the various French regions.

To formulate the survey in such terms was to act on the belief that there were in fact close links between the two. The notion has been labelled in various ways "'la doctrine neohippocratique,' 'la doctrine climatises,' 'la théorie aéristes,' 'la topographie médicale,' 'la nosologie géographique" and so forth. The director and principal correspondent of the inquiry was Vicq d'Azyr, the celebrated anatomist, and it was launched under the auspices of the Société Royale de Médecine. See the introduction by Jean Meyer, "L'Enquête de l'Académie de Médecine sur les épidémies 1774-1794," pp.9-20. For a further discussion of the Societe Royale de Médecine's function, see Hannaway, pp. 257-73.

"Etude par ordinateur des données météorologiques constituées par les correspondants de la Société Royale de Médecine (1776-1792)," pp.21-135.


Ladurie & Desaive, pp. 46-61.


17 Goubert, "Le phénomène épidémique," passim.

18 Peter, "Disease and the Sick," pp.117-118.

19 Ibid., pp. 118-120.

20 Specifically, Lebrun pointed out how environmental conditions created an atmosphere that increased the incidence of disease in Anjou. Deplorable sanitary conditions in town and countryside were extremely conducive to a parasite's breeding habits. And, the close quarters between animal husbandry and people must have produced a pestilential atmosphere. See Lebrun, "Les conditions et les causes de la mortalité," pp. 261-81.

21 Ibid., pp. 281-99.

22 Ibid., pp. 471-80.

23 Ibid., pp. 211-16, 228-29.

24 Goubert, Malades et Médecins. For an interesting discussion on the nature of hygienic conditions see pp. 184-92.

25 The following limited discussion on the study of death is offered in hope that the social historian will begin to conduct similar research over a long period of time concerning the Western attitude toward health and illness, the recovery from illness, the desire of the individual to get well, and the sense of social obligation.


27 Ariès, pp. 28, 44.


32. This point is also made by Gelfand, pp. 82-83; and Goubert, "L'Art de guérir," pp. 911-12. In addition, they argue that "empirics" or illegal practitioners challenged the competence of the medical practitioner to mitigate a patient's illness. For a discussion on this topic, see Gelfand, pp. 78-92; Goubert, "L'Art de guérir," pp. 919-21; and idem, Malades et Médecins, pp. 240-48.


34. Ackerknecht, chapter 1.
35 Foucault, chaps. 1-7.

36 Jewson, pp. 234-35.

37 For a discussion on the impact of the hospital structure on medical practice see, Figlio, pp. 280-81, particularly p.280.

38 Miller, pp. 20-21.

39 Ibid., p.25.

40 Ibid., pp. 240-66.


42 Razzell, p.vii.

43 Oiva Turpsinen, "Mortality from Smallpox, Measles and Whooping Cough In Finland, 1751-1865," in International Colloquium in Berlin (West), (1978), pp. 20-23; and Alfred Perrenoud, "Deux cents ans de variole à Genève. Contribution à l'histoire cyclique des maladies," ibid., pp. 30-33. The statistical study of Finland is based on the exploitation of parish registers and national statistics. The demographic data for Geneva is derived from the mortality bills and national statistics which began in 1580 and ceased in 1830.

44 This point is made by McKeown, Population, p.7.

45 Ibid., p.3. According to McKeown, "The reasons for the increase of population have had relatively little attention, and it has been assumed rather than demonstrated that it was associated broadly with advances in medicine and improved living conditions. There has been no serious attempt to establish the time when these influences became effective, or to distinguish between the very different effects of increased food supplies, improvements in hygiene, immunization and therapy under the term (medical measures). For although doctors have contributed to all these, it is important to separate changes in the physical environment from specific preventive and therapeutic measures applied to the individual."
This point is derived from McKeown, ibid., p.107, who noted: "Among reasons given...for rejecting the conclusion that variolation [inoculation] reduced mortality from smallpox, was the observation that control of the disease has been achieved by surveillance and vaccination of contacts rather than by mass immunization."


Ibid., p.615.


See the biographical account of La Condamine by Pierre Conlon, "La Condamine the inquisitive," in Studies on Voltaire and the 18th Century LV, (1967), pp.361-94. This article has placed considerable emphasis on La Condamine's efforts to widen the horizons of man's knowledge most notably in the natural sciences. Although Conlon has cited the works of La Condamine in relation to the campaign for smallpox inoculation, the approach has contributed little to our understanding of how La Condamine's ideas about the practice reflected the opinion of "enlightened" men to such key issues as political economic theory and practice and public health. See also Hahn, pp.70, 89-90, 109.

Hahn, pp. 35-38; 84-90; Cyril B.O'Keefe, Contemporary Reactions to the Enlightenment 1728-1762 (Geneva, 1974), chap. 4. See also the excellent articles in the volume edited by Francois Furet et al., Livre et Société, I (Paris, 1965), passim.
For a fuller understanding of the institutionalized character of the academician during the course of the eighteenth century see the interesting study on the Paris Academy of Sciences by Roger Hahn, passim.

For a discussion on this topic, see McKeown, pp.7-9.

This point is made by Cyril O'Keefe, p.5, who noted: "One of the most disconcerting features of the review articles to modern readers is the almost complete lack of criticism which is regarded today as a necessary element of a review article."
Chapter I

THE TECHNIQUES OF INOCULATION

The smallpox inoculation is probably nearly as old as the disease itself, and reports of its existence appear in the European literature as early as the late seventeenth century. Inoculation seems to have been a long-standing folk practice in China, India, North Africa and regions of Arabia. In all these countries, inoculation was probably perfected over a period of hundreds of years before it came to the attention of European doctors and penetrated the repertory of their officially approved techniques during the eighteenth century.¹

Near Eastern folkways, for example, had provided the practice of inoculation with a full complement of myth and ritual by the time learned Europeans first investigated the matter. The person to be inoculated was viewed as "buying the smallpox"; the method was to transfer the infection by introducing matter from a smallpox pustule into a slight injection made in the patient's skin. And, as we shall see, this was the method of inoculation adopted, though slightly modified, by the European medical profession in the eighteenth century.
The first significant medical account of inoculation to appear in Europe was written by the Greek doctor, Emmanueli Timoni, a widely reproduced abstract which was first published in the Philosophical Transactions in 1714. Timoni, who took a medical degree from the famous medical school at Padua and practiced at Constantinople, claimed that of the "thousands" of people who had been inoculated during the previous eight years "none have been found to die of the operation." He admitted, however, that occasionally patients developed a severe case of smallpox, and in 1701 when a serious outbreak of smallpox took place, four out of fifty cases had contracted smallpox as a result of inoculation "near the confluent sort." Yet, the sudden onset of symptoms led to a suspicion that "these four had caught the common Small-Pox before the Incision was made" - a problem which affected every form of smallpox prophylaxis. Besides this complication, Timoni stated that the pustules resulting from inoculation were "distinct, few and scatter'd; commonly 10 or 20 break out; here and there one has but two or three, few have 100." These mild results from inoculation were almost certainly achieved through the technique of injection employed; Timoni described this as follows:

the Operator is to make several little Wounds with a Needle, in one, two or more Places of the Skin, 'till some Drops of Blood follow, and immediately drop out some Drops of Matter in the Glass, and mix it well with the Blood issuing out; one Drop of
Matter is sufficient for each Place Pricked. These Punctures are made indifferently in any of the fleshy Parts, but succeed best in the Muscles of the Arm or Radius. The Needle is to be a three 'edged Surgeon's Needle; it may likewise be perfor'd with a Lancet: The Custom is to run the Needle transverse, and rip up the skin a little, that there may be a convenient dividing of the Part, and the mixing of the Matter with the Blood more easily perform'd.

The conclusions reached by Timoni about the safety and method of inoculation in Turkey were confirmed by a number of independent witnesses, both medical and non-medical. Peter Kennedy, a Scottish surgeon who had practiced at Constantinople, stated in a book written in 1715, that he had been informed by doctors and merchants living there, "that of the Number of two thousand, which had then lately undergone that Method [of inoculation], there were not any more than two who died." Similarly, the Greek doctor, Jacob Pylarini described in an account published in the Philosophical Transactions for 1716, how inoculation had been introduced into Turkey in 1701 from Thessaly, and described the method of inoculation as follows:

the Greek woman...pricks the middle of the Forehead, and the Temples at the Root of the Hairs; as also the Chin and both the Cheeks, with a steel or golden Needle, not thrusting it straight, but obliquely, and separating the Skin a little with a sharp Point from the Flesh below, Then with the same Needle she introduces the Pus into the little Orifices, and ties a Bandage over the Parts...The eruption is almost always of the distinct kind, and the Pustules not numerous; but frequently twenty or thirty, rarely a hundred, and very seldom two Hundred."
The injection in the forehead, chin, cheeks and so forth was a residue of the Christian belief that incisions, made in the pattern of a cross, would help to insure success. Though we would find this aspect of the practice unusual, the actual technique of inoculation appears to have been very sound and had excellent results.

The mildness of inoculation in Turkey was confirmed by Charles Maitland, who was chief surgeon to the English embassy at the time Lord Montagu was ambassador: "The Pustules, whether many or few never left any Marks or Pits behind them, except only in the Incisions, or Parts Ingrafted." Maitland assisted in the inoculation of Lady Mary Montagu's son at Constantinople in 1717; his account of this second known inoculation of English children (two children of an Embassy Official had been previously inoculated) is not only of historical interest, but marks the beginning of a practice that had a serious and long-lasting effect on the history of inoculation in both England and France. From the very beginning of the practice of inoculation by the English medical profession, a lancet rather than a needle was used, and this affected the depth with which the incisions were made.

The success of the practice was further confirmed by J.N. Boyer, a medical practitioner who presented an
inaugural dissertation at the University of Montpellier in 1717. He concluded his support for the new method as follows:

Le tribut que tout homme doit payer, au moins une fois en sa vie, à la petite vérole, paroissant inévitable, il est plus à propos d'exciter une bénigne par cet artifice, que d'abandonner une affaire de cette importance aux soins de la nature, qui dans la plupart d'autres ces agissant en mère tendre, semble souvent dans celui-ci ne se montrer que sous les dehors d'une cruelle marâtre.11

It is significant to note that this address in support of the medical practice was virtually ignored by the partisans of inoculation in the early eighteenth century and it was not noticed until 1758 by La Condamine in his second memoir.

One of the problems concerning the method of inoculation was that the French medical profession found it difficult to accept this practice because it had not been discovered by one of their own members, but by people with no pretension to the conventional medical wisdom of the period.12 The defensiveness of the medical profession sometimes resulted in extreme arrogance so that one of the earliest opponents of inoculation could say: "En Angleterre, c'est une Vielle Sage-Femme qui en a instruit celui qui nous a valu cette merveilleuse découverte ... L'Inoculation est une pratique populaire, un remède de bonne femme,
ramassé de parmi un peuple ignorant; and on veut mettre cette pratique en valeur."

In fact, most of the innovations in the technique of inoculation came from obscure surgeons and doctors to whom contemporaries contemptuously referred as "empirics"; this is just one illustration in the history of medicine and disease of how important practical medical discoveries have occurred through empirical observation or chance, rather than theoretical understanding.

The first inoculation in Europe was of Lady Montagu's daughter in April 1721, which was performed by Maitland in London. The operation was successful and the patient had less than one hundred pustules as a result of her inoculation. Maitland played a significant role in the introduction of inoculation into England, and he was responsible for the experimental inoculation of the six Newgate prisoners in the autumn of 1721, the success of which helped to persuade the royal family and the aristocracy to have their own children inoculated. Unfortunately, Maitland left no account of his technique, but it is certain that he made deep incisions with a lancet; he described how typically the incisions he made led to "a vast Discharge" of matter, a symptom known to be associated with deep injections. This conclusion was confirmed by an eyewitness account of Maitland's inoculations of the Newgate prisoners: "The Incisions were long and large." The result of this method was
much severer than that practiced by Timoni and Pylarini in Turkey; several children had 300 pustules and more, while one had "above two Thousand." This was the start of a fairly severe form of inoculation, which was used by all practitioners in Europe until Théodore Tronchin, a Genevan doctor, modified the technique in the 1750s, and Angelo Gatti, an Italian doctor who practiced at Constantinople, made a key innovation of technique in the 1760s.

There were two main reasons why the early English inoculators adopted the deep injection technique: an anxiety about whether inoculation produced a form of smallpox (even some French contemporaries questioned whether the light Turkish form would achieve this), and the belief that the "poison" of smallpox had to be discharged through an "issue" for a successful outcome. The latter was part of a classical humoral theory of smallpox, which assumed that everyone inherited the "seeds" of the disease, which had to be expressed through the eruption of smallpox before true health could be achieved. Some of the early inoculators claimed, however, that the deeper injections were also more successful because of the copious discharge at the sight of incision than were the lighter forms of inoculation. For example, Nettleton, who was one of the first to practice inoculation on any scale, wrote in 1722:
I generally found, that in those who discharged most this way, the Fever was more slight, and the Small Pox fever, tho' I have known some do very well when these places have only appeared very red, but have scarce run anything at all, as it usually happens, when the Incision is made so superficial as not to cut thro' the Skin.22

This conclusion was based, however, on only forty cases, and the lack of any systematic experimental evidence meant that Nettleton could in effect assert opposite propositions in the same sentence, without feeling a need to further clarify the position. Contemporaries were perhaps predisposed to accept the conclusion about the benefits of deep incisions because of their theoretical beliefs.

The practitioners of inoculation in the 1750s realized some of the problems that very deep injections created, and Tronchin, who was one of the first to practice inoculation on any scale in France, described the new technique as follows:

Quant à l'opération, on fait aux deux bras dans la petite externe and moyenne, au-dessous de l'insertion du muscle détoïde, pour ne point gêner la liberté du mouvement, une incision de moins d'un pouce de long & si peu profonde, qu'elle entame à peau. On insère dans la plaie un fil de la même longueur, imprégné de la matière d'un bouton mur and sans rougeur à sa base, pris d'une petite vérole naturelle soit artificielle, d'un enfant sain; on couvre le tout d'un plumasseau, d'un emplâtre de diaplume, & d'une compresse qu'on assujettit avec une bande.23
Moreover, the symptomatic advantage claimed for the new lighter method of inoculation was that it led to less soreness at the site of injection and fewer inflammatory complications;\textsuperscript{24} nowhere in the literature is it stated that the severity of the inoculated smallpox - the number of pustules and so forth - was affected. Although the newer lighter method was apparently adopted by all popular inoculators in the 1750s and mid-1760s, the symptoms resulting from these inoculations were still severe. For instance, a letter in Fréron's \textit{L'Année Littéraire} revealed the severity of symptoms as a result of the technique in 1765:

\begin{quote}
M. Lami de la Perriere fit inoculer le 8 Janvier deux de ses enfans par M. Acton...
L'un & l'autre des inoculés eurent une petite vérole tres-discrète; les pustules étoient grosses, mais peu abondantes; and ces enfans se portoient à merveille, lorsqu'une nouvelle fièvre, précédée and accompagnée d'assoupissement and de vomissement, survint le quinzième jour de l'Inoculation. Le corps fut couvert de boutons militaires rouges; la peau devint brulante, la gorge s'embarrassa, s'enflamma; les glandes du col se gonflèrent; tout le voile du palais, les amigdales & le pavillon du pharinx furent chargés d'aphtes.\textsuperscript{25}
\end{quote}

The key change in technique and resulting symptomology occurred with Gatti, as we shall now see.

Angelo Gatti appears to have started the practice as an inoculator in about 1750. Kurt Sprengel, a medical historian, gave the following account of his new method:

\begin{quote}
Quant à l'opération elle-même, il la pratiquait avec une épingle trempée dans le pus variolique, qu'il insinuait à diverses reprises au dessous de l'épiderme
\end{quote}
Since Gatti used a needle rather than a lancet, his technique appears to have been identical to that practiced in Turkey. Given that it became generally agreed that the Gatti method was a key change in technique, it is clear that much lighter effects were produced by injecting virus into the epidermis, or, at most, the boundary between the epidermis and dermis, rather than fully into the dermis.27

The improvements in technique are obviously critical in assessing the safety of inoculation. However, there is one major obstacle which must be surmounted before we can discuss the evidence on the severity of inoculated smallpox: the problem of people contracting natural smallpox before their inoculation. We have already noted how Timoni had experienced this difficulty when attempting to assess the effects of inoculation in Turkey, and it was a problem for anyone attempting to evaluate this form of smallpox prophylaxis. French inoculators considerably compounded this problem by introducing a relatively lengthy period of medical preparation before inoculation - a period which obviously left those to be inoculated vulnerable to natural infection, particularly during a period of smallpox epidemic. Gatti wrote in 1766 an
account of how the European inoculators introduced the practice of preparation:

Ever since inoculation has been received in Europe, the practitioners have been of the opinion that the essential advantages of artificial and natural smallpox were, 1. the preparation; 2. the discharge of the variolous matter by means of the wounds; 3. the assistance of art in a disorder which is known as soon as it appears. All inoculators have said, prepare your subjects, procure an outlet to the venom; be attentive to administer every help of art, when the disorder shows itself.28

The major reason for the introduction of medical preparation again appears to have been due to a belief in humoral pathology, though La Condamine strongly implied that it was very much in the medical profession's economic interest to adopt this measure.29 However, there was no single systematic and consistent body of beliefs on the humoral pathology of smallpox which can be quoted from the literature.30

Preparation took the form of a restricted diet, purging and blood-letting, and these were measures which were used by the French medical profession in the treatment of natural smallpox before the advent of inoculation. Tronchin resorted to dietary measures in the treatment of his cases,31 and Samuel-André Tissot, a Swiss doctor and partisan of inoculation, justified preparation in these terms:

Quand l'enfant est très-vigoureux et paroit sanguin, on doit lui faire une ou deux saignées, et lui faire prendre du nitre soir and matin, pendant tout le temps de la préparation: ces précautions sont nécessaires
pour prévenir l'inflammation que le venin de la petite vérole produit très-aisément dans des corps si vigoureux.32

What emerges from this quotation principally is a notion of "constituitions" which are too "high" - inflaming the virulence of the disease by energizing it - or too "low," so as to be incapable of expelling the illness.33 Tissot, like his contemporaries appears to have been most concerned with constitutions which were too high. According to the conventional medical wisdom, constitutions which were thought to be too high were robust and active ones, and the disease was believed to be inflamed by animal foods - but reduced by a restricted diet, bleeding and purging.34

In addition, Tissot required patients:

à ne leur donner que peu de viande, & seulement des viandes blanches; mais à les faire vivre principalement de légumes & des fruits, & à ne leur laisser boire que l'eau, ou du lait coupé avec le l'eau, ou du petit-lait.35

This period of preparation was a relatively lengthy affair, and Tissot writing as late as 1787, referred to the necessary preparation as follows: "un choix d'alimens qui ne soient ni fort nourrissans, ni gras, ni salés, ni âcres, pendant quinze jours ou trois semaines."36

For the most part, the medical profession appears, however, to have realized the irrelevance of much of the preparatory measures, and Tronchin writing in 1765 about
the history of inoculation in France and Europe stated:

Les enfans ont à peine besoin de
préparation: quelques jours de régime
& une ou deux purgations suffisent;
rarement on emploie la saignée.37

This simplification of preparation does seem—at least among children—to have led to a shortening of time involved, and it played a significant role in mitigating the great potential dangers to patients and people being exposed to smallpox.

The first inoculator to completely dispense with preparation was Gatti. Sprengel described his method and noted:

Sa méthode était à tous égards extrêmement simple. Comme il n'inoculait, autant qu'il était en son pouvoir, que des personnes bien portantes, il n'employait jamais de préparation, ou s'il y trouvait contraint, il se gardait surtout de recourir aux débilitans et aux purgatifs.38

His innovation was merely a return to the Turkish practice and in one sense was an inevitable logical development leading to a greater simplification of inoculation.

However, some more conventional medical practitioners were reluctant to entirely abandon preparation. Gandoger de Poygny, who practiced at Nancy, complained in 1768 that,

il y a des sujets qui, sans être actuellement malades, doivent faire quelques remèdes, avant que d'être inoculés. Cette préparation concerne 1., les sujets dont la constitution est trop foible, trop délicate; 2., alors il faut fortifier, ou le tempérament du sujet, & s'il est trop fort, & il faut l'affloiblir; 3., enfin il peut y avoir quelque vice particulier qu' il faut corriger.39
Although there is some substance of truth in this statement, it is simply an illustration of how the medical profession had difficulty in agreeing upon a standard medical procedure that was obvious to many other experienced inoculators because of their attachment to the notions of contemporary conventional medical wisdom.

Given the variations in technique and methods of preparation discussed so far in this chapter, the evaluation of the severity of the symptoms resulting from inoculation against smallpox, obviously becomes difficult. A review of the available literature on this problem does lead to certain tentative conclusions, but these must always be set in the context of the various complicating factors already discussed.

There are two important ways of evaluating the severity of the results of inoculation: firstly, the number of pustules, amount of fever, and other symptoms of smallpox, and secondly, the proportion of people dying after inoculation. We shall discuss these in turn. De Baux, a doctor who practiced inoculation in Avignon gave a list of the number of pustules in two of his inoculated cases in 1760 as follows:

L'enfant a eu 45 à 50 boutons, point de fièvre de suppuration: la huitième jour de l'éruption, il était debout. Un fils unique, âgé de sept ans, né d'un père asthmatique, a eu le même fort que le premier: il a eu seulement quelques boutons de plus.40

This list is confirmed by Tissot who also wrote a brief
account on the number of pustules resulting from his inoculated cases:

Le nombre ordinaire des boutons est entre cinquante & quatre cent. J'en ai vu plusieurs fois beaucoup moins de cinquante; & trois ou quatre fois, autant que dans une petite vérole discrete très abondante.41

The variation in the number of pustules may have been partly a function of differences in technique used by De Baux and Tissot - the cases with the smallest number of pustules may well be those where the lightest incisions were made - but the important overall conclusion to emerge from the brief lists, is the somewhat greater severity of symptoms than reported from Turkey.

It was generally acknowledged, however, that the Gatti method reduced the risks of dying from inoculation. Gatti is reported to have inoculated 200 people between 1763 (when he first started his practice in France) and 1765, without a single death,42 and an extract in the Journal Encyclopédique claimed in 1769 that Gatti had inoculated at least 200 people in that year without a single fatality.43 Although it is impossible to assess this claim directly, even those with a vested interest in denying the success of inoculation did not deny the spread of the Gatti method. This led Baron Grimm, the German literary and social observer who held the philosophe point of view, to remark in 1767: "Je suis convaincu que cette méthode finira par être généralement adoptée dans toute l'Europe."44
This tentative conclusion was confirmed in France by an independent practitioner in Nantes who used the Gatti method and stated in 1774:

Partisan de l'inoculation, & Inoculateur moi-même, cette nouvelle me fut d'autant plus agréable, que, témoin des ravages affreux que la variole naturelle ne cesse d'exercer tous les ans dans ma patrie je désirais de plus en plus de l'y voir établie. Il étoit bien étonnant qu'aucun médecin, ou chirurgien de Nantes ne se fût adonné à la pratique de l'inoculation; mais, soit qu'elle eût peu de partisans déclarés parmi ces MM., soit qu'il fallût un étranger, un Italien même, pour décider la confiance des Nantois.45

These examples do not mean that people ceased to believe that inoculation did not spread natural smallpox. In fact, this appears to have existed in the late eighteenth century. For instance, J.P. Goubert noted:

Si l'on en juge d'après ces documents, les "préjugés" populaires contre l'inoculation n' étoient pas sans fondements: il se pourrait même que certaines épidémies de variole, par exemple, en 1773, 1779 et 1783 aient été, au moins partiellement, causées par les inoculés.46

But during the course of the late eighteenth century, it is highly probable that natural smallpox as a result of inoculation was becoming a rare event. As we shall see, this was partly due to the recognition of the infectious nature of the disease and measure of isolation being introduced to prevent its spread, such as the provision of isolation of patients at home, together with improved housing and nutrition of the poor. This and the somewhat rigid quarantine regulations introduced, particularly
during epidemic outbreaks, to prevent the importation of smallpox into the town, were probably more important measures than inoculation in determining the diminution in incidence of natural smallpox during the late eighteenth century.

It might be thought that some of the foregoing evidence suffers from a lack of analysis, and that an element of exaggeration has crept into some of the accounts of the success of inoculation. Perhaps, there is a substance of truth to these accusations. This chapter, however, has attempted to demonstrate how the methods of inoculation and the severity of its techniques affected the extent of the practice during the eighteenth century.
NOTES

1. Théodore Tronchin, art. "Inoculation," Encyclopédie p.755. Tronchin wrote: "Son époque n'a point de terme fixe en Afrique sur les côtes de Barbarie, sur celles du Sénégal...en divers endroits de l'Inde... enfin à la Chine, ou elle a reçu une forme particulière."

2. Emmanueli Timoni, "An Account, or History of the Procuring the Small Pox by Incision; or Inoculation. As it has for some Time Been Practised at Constantinople," Philosophical Transactions, XXIX (April-June 1714), pp. 72-82.

3. Ibid., p.72.

4. Ibid., p.74

5. Ibid., p.74

6. Ibid., p.73


12 This point is made by M. Bariéty and C. Coury, Histoire De La Médecine (Paris, 1963), pp.483-84, 585-87.


15 Maitland, pp. 8-10.


19 Ibid., pp.30-31.

20 See, for example, Hecquet, pp. 356-57.

21 For a discussion on the conflicting viewpoints of contemporaries toward this medical theory see Genevieve Miller, The Adoption of Inoculation for Smallpox in England and France (Philadelphia, 1957), pp.244-260.

23 Tronchin, p.758.

24 Ibid, p.758. Tronchin noted the symptomatic disadvantages of the deep incisions as follows: "L'irritation des biceps sur lequel se fait l'incision, augmente très-souvent la fièvre & cause jusques sous l'aisselle une douleur quelquefois vive & presque toujours inquiétante."


27 "Variole," in Dictionnaire des Sciences Médicales 57 (Paris, 1821), p.82."...ces incisions, de quelque lignes de longueur, ne devaient comprendre que l'épiderme, et il était établi en principe que l'opérateur devait attendre quelques instans avant de voir le sang. Des accidents terribles avaient appris combien il était dangereux d'enfoncer trop profondément l'instrument tranchant: on avait vu, dans ce cas, le plaies se trans­former en ulcères du plus mauvais caratère...Les in­cisions ne doivent donc fendre que l'épiderme; on couche dans leurs longueur un fil imbibe* de la matiere vario­lique." For a summary of the prominent methods of inoculation see "Variole," pp.79-85.


30 This point is confirmed by La Condamine, Ibid., p.637 who remarked: "Je parle ici germe de la petite vérole d'apres l'idée reçue d'un grand nombre de médecins, & niée par d'autres, parce que toute théorie en médecine est problématique."
31. For a list of the clientele attended to by Tronchin in the 1750s see La Condamine, "Second Mémoire," p.455.


34. This point is confirmed by Tronchin, p.758, who wrote: "A l'égard des adultes, comme il s'agit de disposer le corps à une maladie inflammatoire, plus le sujet est sain & vigoureux, plus généralement parlant ses forces ont besoin d'être affoiblies par la saignée, la diète, l'usage des remèdes rafraîchissants. On y joint quelque purgatifs & quelquefois les bains. Il est à propos de consulter un médecin sage, qui connaisse le tempérament de celui qu'il dispose à l'inoculation, & qui puisse lui proscrire un régime convenable."

35. Tissot, p. 269.

36. Ibid., pp. 268-69.

37. Tronchin, p.758.

38. Sprengel, pp.60-61. For a similar discussion on Gatti's method see Grimm, *Correspondance, Littéraire, Philosophique et Critique*, VII, (Paris,1877), p.319, who wrote: "Il prétend qu'il ne faut pas préparer, parce que le sujet qu'on veut inoculer doit être en état de santé, et que s'il est malade, il faut le guérir. Cet état de santé étant le meilleur état possible pour donner la petite vérole."


41. Tissot, p.275.

"Extrait d'une lettre du 25 Avril 1769," Journal Encyclopédique VI, (1769), pp.287-88, the anonymous writer stated: "De 122 qui ont subi l'opération, 112 ont pris la malade qui n'a eu aucune suite fâcheuse. Tous se portent, pour le moins, aussi bien qu'auparavant. Les autres dix n'ont point pris la petite vérole, quoiqu'inoculés plusieurs fois; il est probable qu'ils l'ont eue dans leur tendre enfance & plusieurs en portent des marques...Les petits murmures contre la commission dont étoit chargé le Dr. Gatti se sont convertis en bénédictions, & plus de 40 habitans de cette petite ville se sont faits inoculer par différens Chirurgiens instruits par M. Gatti.... La fureur pour l'inoculation redouble; on vient d'inoculer plus de 50 enfants du peuple dans la ville même."

Grimm, Correspondance VIII, p.321.


Goubert, Malades et Médecins p. 325.
Chapter II

RESISTANCE TO THE INTRODUCTION OF INOCULATION AGAINST SMALLPOX

Although the practice of inoculation against smallpox had been introduced into medical and court circles in England, the interest in inoculation continued to face stubborn opposition between the years 1722-1734 in France. As we have seen, there had certainly been a relatively extensive body of reliable information, for not only were the medical accounts of Timoni and Pylarini available to learned circles, but the Newgate experiment (1731) and the initial royal inoculations were reported to France in detail.¹

Hence, this chapter is divided into three main themes. The first deals with the propaganda warfare used by the court doctors to introduce inoculation; the second treats the period when the technique came to the medical practitioner's attention and how it was resisted as a legitimate branch of professional medical practice; and the third is concerned with the contemporary viewpoint that saw the practice as interference with God's will, as a means of spreading natural smallpox among healthy people, and as an ineffective prophylaxis against smallpox.
During the course of the eighteenth century, a relatively new and growing section of the medical profession under the patronage of the king - the court doctors - put forward demands for the reform of the medical guilds, for changes in law relating to medical practice, and the reform of medical education. As part of the movement for medical reform, the struggle to introduce the practice of inoculation can be seen as an important campaign in the social origins of changes in the structure of the profession. Indeed, this minority group provides an important clue to an understanding of the struggle for reform of the Paris Faculty of Medicine in the eighteenth century.

As for the institutional structure of the medical profession during this period, the controlling body for doctors was the Paris Faculty of Medicine. For centuries the Paris Faculty had formulated and monopolized the decision-making functions over medical affairs in Paris. Holding firm the notion of its authority to instruct and sanction licenses from clerical rather than royal privilege, it had during the course of its development become an exclusive medical corps and principal judge in key issues relating to public health. Indeed, it was an élite professional corps founded on a good reputation and a solid network of acquaintances which constituted a privileged
path to wealth and prestige. Comprised of 88 doctors in 1720 and granting admission to two students per annum, the Paris Faculty was held together by a common body of knowledge expressing a traditional and dogmatic position. Its approach seemed to derive from assiduous observation and rigid adherence to ancient custom, modes of thought and rationalization. In order to maintain the high status and standards which doctors had long enjoyed, the Paris Faculty tended to generate skepticism and ambivalence toward any medical affairs which were legally issued from other governing bodies, namely, the Crown. It has been noted that the Paris Faculty was not considered to be an opponent of progress per se, but only tolerated that progress which came from its own rank-and-file. Perhaps this explains, to some extent, the reputation accorded it of consistently resisting novel medical ideas and practices. For example, the Paris Faculty opposed Harvey's doctrine of the circulation of the blood, and inclusion of antimony under the rubric of approved drugs, and the efficacy of Peruvian bark during the course of the seventeenth century. It is also well-known that the medical corps of the Paris Faculty became so preoccupied with monopolizing the huge field of health that they employed legal methods by which they could refuse to examine candidates for its license in any branches of practice traditionally held to be within the sphere of the Paris Faculty practitioner.

The structure of the profession, however, was altered by the emergence of a new type of practitioner - the court
doctor - who cut across the professional divisions which were enshrined not only in the legal system, but also in the institutional structure of the profession as a whole. The development of the conflict appeared to derive from the attempt of Louis XIV to consolidate the medical affairs of France under royal direction and control by means of circumventing the power of the Paris Faculty through the agency of his personal medical corps. In effect, a rival medical corps was established to challenge traditional authority of the Paris Faculty. Yet it must be remembered that the court doctors were not a university guild. They had no formal teaching functions; they offered no courses; and they granted no degrees. For the court doctors medicine was an open activity never to be restricted to a group of initiates. Moreover, they were recruited directly by the king not on the principle of any formal criterion of eligibility but on the basis of demonstrated competence alone. Indeed, it was this idea of demonstrated competence that was the key to their understanding of their role. The court doctors were, first and foremost, a body of experts. Secondly, they were often graduates of universities other than Paris and constituted part of the upper echelon of the court. Granted jurisdiction over the practice of medicine and pharmacy throughout the entire kingdom, particularly in the legal realm, they obviously began to intrude upon the legitimization of the Paris Faculty's dominant position within the profession, and of their status within the learned community. For example, Paul Delaunay has noted
how the Paris Faculty feared that the influx of court doctors would threaten to undermine their authority and lower their status in that of the profession as well as in the general society:

Ce docteur de Montpellier [the court doctor: Chirac] formait des projets étrangement domi­nateurs rêvant d'être 'le chef de la médecine du Royaume,' le directeur et l'inspecteur général "des études et réceptions des médecins de toute les écoles du royaume en qualité de surintendant des trois corps de la médecins et sur les Facultés dont les doyens eussent été ses lieutenants, en somme, un pouvoir analogue à celui du premier chirurgien; on disait même, qu'il allait tenter de prendre pied à la Faculté par la création d'une Académie de Médecine.12

In light of this threat, the Paris Faculty reacted in a manner typical of the time by employing the tactic of refusing to sanction licenses to medical practitioners who were not Paris graduates.13

It should be apparent that the court doctors did not fit closely with the traditional model of the doctor, and it is not surprising that they should be dissatisfied with a Faculty which was dedicated to maintaining the absolute control of medical practice and health-related problems in Paris. It must be emphasized that the problem of the relationship between the Paris Faculty and the court doctors was not simply an abstract debate about the nature of medicine as a body of knowledge, for the profession as a whole was initially linked to questions of status, both within the professional community and in the general society. Indeed, the struggle between the Paris Faculty
and the court doctors during the eighteenth century can be seen as a real conflict of interest on a social structural level.

II

In 1722 the court doctor Claude-Jean Baptiste Dodart, son of the celebrated naturalist and academician Dennis Dodart, prepared the ground for the discussion of inoculation in France. Interested in following the English model based on the successful inoculations of the English princesses in 1722, Amelia and Carolina, Dodart appears to have been the first individual to contemplate measures for the introduction of the practice into France - at least if La Condamine's account is to be accepted. Fully aware that its basic precepts conflicted with the moral and philosophical values of the ecclesiastical authorities, he consulted in that same year with the Jesuit Cardinal André Hercule Fleury on the religious and civil legality of inoculation. Shortly thereafter, Fleury proclaimed his support for the practice and in turn proceeded to persuade the Régent, the Duc d'Orléans, to sanction experimentation in order to evaluate the risks of inoculation. Resolved to obtain expert medical judgement, Dodart then consulted with Jean Delacoste, a recently repatriated French religious exile and doctor who had studied with Boerhaave at Leyden and had witnessed the practice in England. Although he obtained medical training at
Leyden (1701) and published in London in 1715 an English translation of Boerhaave's classic work, *Aphorisms*, very little further information on his personal experiences is available in the literature. Delacoste, however, was a central figure in the fruitless attempt to introduce inoculation into France during this period, as we shall now see.

At the request of Dodart, who was collecting information and data on the method of inoculation and its success in England, Delacoste wrote to Sir Hans Sloane, the secretary of the Royal Society, directly on the question of the growth of the practice in 1723.

> through what Motives the King of England has been prevaild with to encourage that practice and if you find it take among the people notwithstanding the arguments used against it by several Physicians and Divines.

This was a very important issue as it determined whether or not London's medical and court circles were well enough organized to spread the practice of inoculation as soon as the local demand for such protection developed.

Using his position at court, Dodart had also discussed the practice of inoculation and its early successes in England with Pierre Chirac, the first doctor to the Duc d'Orléans, who also expressed his support for the medical practice. Therefore, with encouragement from the Regent to introduce the practice, Dodart and Chirac proceeded in 1723 to articulate their position before some clergy of the Paris Faculty of Theology who opposed the practice on moral
and philosophical grounds. Delacoste, who drew up the account of the controversy, summarized the clergy's position as follows:

La Petite-Vérole artificielle, disent les uns, n'est pas une véritable Petite-Vérole; & supposé qu'elle le soit, elle ne doit point rassurer contre l'avenir. Elle n'est que trop véritable, puisqu'elle a même été mortelle à plusieurs: d'où ils concluent que l'Inoculation est illicite & qu'on ne peut sans crime exposer ni enfants ni adultes aux suites d'un mal dont la Providence les auroit peut-être preservez.21

The orthodox religious belief in providence no doubt buttressed their attitude towards inoculation and the doctrine that disease came from God. The latter could be interpreted to mean that it was impious to interfere with God's will by attempting to take conscious precaution against disease. This was, perhaps, one of the major initial reasons why parents were reluctant to have their children inoculated throughout most of the eighteenth century. The controversy, however, was abruptly halted when Parisian society encountered a severe epidemic of smallpox that same year.

The serious outbreak of smallpox which occurred in Paris afflicted a considerable portion of the town-dwellers and caused widespread fear. Among the notable victims were the Comte de Nogent, the Marquis de Launaty, the Comte de Bissey and the Duc d'Augmont. Voltaire had witnessed the death of his friend Grenonville in the epidemic, and he himself had also contracted the disease.22
Moreover, it led Delacoste to gravely tell his readers:

Quelque exemple d'intrepédité que nous sonnent les Turcs & les Anglois sur ce qu'on appelle l'Inoculation ou l'Insertion de la Petite Vérole; il y aura en France une grande révolution à faire dans les esprits, avant que de les rassurer contre les risques d'une pareille opération... les repugnances de personnes timides ne sont pas néanmoins les seules oppositions qu'il ait à combattre. Il se voit de plain sur les bras. Les Docteurs en Médecine & les Docteurs en Médecine & les Docteurs en Théologie, qui tous ensemble attaquent la méthode de l'Inoculation, les uns par les principes de leurs arts & les autres par ceux de Morale chrétienne.23

The state of panic which smallpox must have engendered was used by the forces, directly or indirectly, opposed to the practice in order to foster public resistance to inoculation. It is significant to note that the fear of the epidemic served as one of the mechanisms that prohibited the introduction of the practice into French society during the early eighteenth century. Areas where epidemics were infrequent, were likely to respond in panic to the threat of an epidemic (as they did in Paris), and perhaps this is one of the most important factors in determining the rate of spread of inoculation in different regions of France. On the other hand, the human response to an epidemic afflicting a large proportion of the population at just one point in time led to a discussion of measures to conduct experimentation with inoculation.

Hence, the timing of Delacoste's report on the progress of the practice in England and against moral and medical superstitions which appeared in 1723 is of
historical significance. This propaganda report contained strong evidence for the milder effects of inoculation and an abstract of Charles Maitland's *Accounts* (1721). The latter is described as follows:

Ses recherches furent aussi heureuses qu'elles le pouvoient être; on l'accabla d'expériences; on lui produisit des Teméraires de toute espèce; gens qui avaient eu la curiosité de subir une seconde fois l'opération, ou que l'on avait fait coucher avec d'autres infectés de la Petite-Vérole naturelle: la méthode de l'Inoculation avait triomphé par tout.24

Further on Delacoste provided statistical evidence from England to buttress his claim that the results of inoculation were less severe than natural smallpox:

1. Que la Petite-Vérole naturelle y a été très mortelle depuis Noël de l'année 1722 jusqu'au 29. Juillet de l'année suivant. 2. Que la Petite-Vérole artificielle y a eu un succès merveilleux dans la même espèce de temps, quoique pratiquée sur plusieurs Adultes de 32. 35. 45. 50. ans. Entre 1244 malades de la première espèce de Petite Vérole, la liste en compte 165 de morts; ce qui suit un sur huit & dix de plus & entre quatre-vingt de la seconde espèce, elle n'en compte aucun, non seulement qui en soit mort, mais qui ait eu d'autres Symptômes que ce qui paroit dans la Petite-Vérole distincte & régulière.25

There may have been a note of inaccuracy in some of his statements, but the overall emphasis on the statistical results of inoculation was almost certainly correct: inoculation reduced the risks of dying from smallpox. Unfortunately, this compelling work suffered, to some
extent, because Delacoste did not provide an account of the method and technique, two essential features in the propaganda for the introduction of the practice into France.

As a result of Delacoste's propaganda work, a commission of nine prominent doctors of the Paris Faculty of Theology convened in order to examine whether or not experiments with inoculation on criminals could be considered legal in France. In the seventeenth century similar legal decisions were required for experimentation with new drugs and surgical techniques on condemned criminals. For example, Louis XIV authorized the elder Helvétius to experiment with ipecacuanha at Bicêtre. Delacoste made a case for the introduction of the practice on the successful royal experiments at Newgate and he argued that it was of general benefit to mankind. Ostensibly, this justification supplied by Delacoste was acceptable to the majority for they decided to sanction by law experimentation with inoculation on condemned criminals and issued the following formal statement: "Qu'il étoit licite dans la vue d'être utile au Public, de faire ses expériences de cette pratique." The experiments, however, were never conducted despite the sanction of the Theology Faculty and the patronage of the court doctors. La Condamine was somewhat puzzled by this, but ascribed the failure to four key factors:

Les bruits faussement répandus des mauvais succès de l'Inoculation à Boston, pendant l'été de 1723, le nombre des morts que l'épidémie emporta cette même année à Londres,
& que l'on mit faussement sur le compte de l'opération, quelques malheurs causés, qui commirent des excès, avaient diminué la confiance publique.... Ils eussent été favorisés par un prince (Monseigneur le Duc d'Orléans, Régent de France, mort le 3 Décembre 1723)...Mais à peine eut-il les yeux fermés qu'on soutint dans les écoles de médecine un thèse (An Variolas inoculare nefas?) qui sonna le toscin contre les inoculateurs: on y traite leur opération de criminelle, ceux qui la pratiquent d'imposteurs & de borreaux, & les patiens de dupes.29

Claude de La Vigne, the doctor who defended the medical thesis An Variolas inoculare nefas?, viewed the spirit of novelty as dangerous in medicine as well as in religion. Although new philosophical systems could be created in regard to the inanimate universe, they were extremely dangerous in dealing with human life, and he had to conclude that,

C'est usurper les droits de la divinité, que de donner une maladie à celui qui ne l'a pas, ou d'entreprendre d'y soustraire celui qui dans l'ordre de la providence y étoit naturellement destiné.30

Perhaps, the formal religious argument mirrored a growing popular prejudice against inoculation as La Vigne noted:

L'Inoculation est un mal moral: en voici la preuve. On ne peut nier qu'il ne soit mort quelques inoculés; le succès de cette méthode n'est donc pas infaillible: on ne peut donc s'y soumettre sans exposer sa vie, donc il n'est pas permis de disposer: l'inoculation blesse donc les principes de la morale.31

More importantly, there was the argument against inoculation on medical grounds. La Vigne pointed out the great possibilities of inoculation spreading the smallpox
contagion:

En effet la contagion se répand par celui qui reçoit la petite Vérole, par celui qui l'insère, par celui qui apporte le Pus; elle se répand encore plus universellement par ceux qui ayant après l'Inoculation des ulcères sortent encore convalescens, & vont ainsi porter dans les rues & chez leurs amis le poison dont ils ne sont pas encore délivrés.32

We must allow for some exaggeration in this account, as it was written by someone concerned with discrediting inoculation, but it probably contains a substance of truth about inoculated cases as a source of contagion and clearly illustrates the lack of concern of many contemporaries to provision of isolation of patients from other members of the community who had not contracted smallpox. Indeed, as we shall see later, a key factor checking the practice of inoculation was the fear that it would spread smallpox to unprotected segments of a community. This invariably led to a prohibition of the practice. It is highly probable that town authorities were frightened by the fact that, if inoculation were practiced, it would spread the disease to unprotected people.

Another important factor in the early opposition to inoculation was that Delacoste himself held no significant rank within the medical community. Despite the fact that Delacoste had obtained formal medical training, La Vigne contemnously referred to him as an "empiric" who had come to seek the favors of fortune and an asylum in France, which did little to case a favorable light even among sympathetic medical practitioners.33 It must be pointed
out that La Vigne employed the term "empiric" to
discredit Delacoste among the rank-and-file practitioners.
And, in the context of the early eighteenth century, the
attempt of a doctor or surgeon to apply a remedy to an
illness which at the time had no medical foundation usually
prepared the way for professional criticism and action by
means of withholding patronage and establishing a legal
monopoly through the enactment of licencing laws. 34

In June 1723 Sloane published a letter in Philosophical
Transactions that he had received from Delacoste, revealing
Delacoste as an opportunist who had notions of securing a
patent for the practice in France:

In short, Sr, This is an opportunity
of making myself known to ye Publick and
agreeable to the man who has it daily in
his power to serve me. 35

Further on he added:

This is therefore to begg of you to hasten
as much as possible the favour I desird in
my Last viz: to acq.t me with the history
and progress and method of it in England,
not only to his [Dodart's] Satisfaction
but to serve me as a guide in this affair
which in all likelihood will prove of
great advantage to me. I have great pros­
pect that I shall obtain a patent for that
practice, if the Experiments prove satis­
factory and if yr account gives hope of
Success in the Main. 36

To some extent, this illustrated his motives for attempting
to introduce the medical practice into France. Although
medical patents might not have been discredited and
doctors did indeed apply secret "folk" remedies to cure
illness, the attempt to keep the method a secret in order
to secure the exclusive rights for a lucrative new medical practice would not have been encouraged or tolerated by his contemporaries. In France, the attempt to monopolize inoculation by means of patent rights never took place again throughout the eighteenth century.

The most notorious opposition came from the formidable Philippe Hecquet, a senior medical practitioner of the Paris Faculty and erstwhile Dean, who acquired a reputation for his conventional views on medicine in the eighteenth century. For instance, he had objected to the application of chemical remedies to illnesses and the ways in which many drugs or surgical techniques reached the public from the hands of ill-trained and adventurous "empirics." He believed that bloodletting was the primary therapeutic agent, for which he was satirized as the pedantic, verbose Dr. Sangrado in Le Sage's *Gil Bras*. Hecquet advanced a program for sound medicine which emphasized nature rather than books, and tradition rather than close observation as a guide for treating the causes of illness and disease. In this respect, he felt that the introduction of novel medical ideas, instruments, techniques and procedures departed from the basic precepts of nature. Therefore, Hecquet set forth the code of nature and its relation to man in his essay entitled: *Raisons de doute contre l'inoculation* which demonstrated that modern medicine could not contravene natural laws that God had established.
In fact, he confessed his belief that "la médecine est l'art de penser sur la santé des hommes, la science de méditer sur leur conservation." In addition, Hecquet attempted to refute the practice of inoculation directly with the conviction that nature possesses a natural wisdom which cares for mankind:

Entre les mains de la nature c'étoit un ouvrage de sagesse; dans celles de l'art c'est une oeuvre du hazard, une entreprise d'aventure; parce qu'enfin un miserable émetique brusquement donné, où quelque évacuation de cette espece aussi mal entendue renferme toute la précaution qu'on apporte pour se préparer à l'Inoculation.

Further on he concluded that inoculation was contraire aux vues du Créateur, car qu'ainsi ne soit qu'on donne à l'homme des maladies qui n'auront point été prévues dans la création de son corps, ce seroit faire ce qui n'auront point été dans les vues ou les arrangemens de la providence.

This was of primary importance for when Hecquet stressed the dependence of medicine on God and pleaded for the recognition of divine power, he was reflecting the major concern of his period, namely, a traditional religious attitude toward illness and disease.

In the late 1720s and early 1730s, a limited number of learned men campaigned on behalf of inoculation against smallpox. For example, La Condamine reported his personal observations in Constantinople to the Académie des Sciences in 1732 as follows:

L'inoculation de la petite vérole est, comme on sçait, usitée depuis long-temps en Levant;
c'est même de-là qu'elle a passé en Angleterre. Cette opération est aujourd'hui non-seulement pratiquée par les sujets du Grand-Seigneur; mais un grand nombre de Francs de toutes les Nations d'Europe établis à Constantinople, & qui y ont épousé des Grecques, se sont conformés sur ce point à la mode du Païs, sont tous les jours inserer la petite vérole à leurs enfans & se trouvent bien de cet usage.43

With the appearance of Voltaire's *Lettres Philosophiques* published in 1734 - a work in which his English observations and Anglophile background were made to serve, directly and indirectly, as a means to attack the structure of French society - his eleventh chapter entitled "Sur l'insertion de la petite vérole," stemming from his personal experience in London (1726-1729), stressed the deliberate immunization against smallpox and inveighed against quackery.44

Gustave Lanson's review of the propaganda letter, however, points out that it was highly sentimental in content. For example, there seems to be no sound basis for the story popularized by Voltaire that inoculation had been invented among Circassians because

Les Circassians sont pauvres, & leurs filles sont belles, aussi ce sont elles dont ils font le plus de trafic; ils fournissent de beautés les Harems du Grand Seigneur, du Sophi de Perse, & de ceux qui sont assez riches pour acheter et pour entretenir cette marchandise précieuse.45

By 1725, however, the adverse propaganda on inoculation had checked any efforts to introduce the practice into France. It was looked upon with fear and suspicion by the French public as a whole, particularly those living in Paris.
According to contemporary perceptions, the reluctance was firmly grounded on three main points. The first was whether inoculation guaranteed immunization against smallpox or not; secondly, whether or not it involved a lesser risk than the disease contracted in a natural way; and thirdly, the reluctance to introduce the practice of inoculation into a community that was free from it.

As for the medical profession itself, it was the schism between the court doctors and medical practitioners of the Paris Faculty toward inoculation that checked the practice. Crusty, doctrinaire, privileged and exclusive, members of the Paris Faculty resisted the influx of new ideas and programs with every means at their disposal. As the governing medical élite, they held firm the notion that they were best suited to determine what was best in the development of medicine. The employment of new techniques used in the operation was also resisted by a medical corps far too engrossed in attending to its proper function: namely, the sanctioning of licences to practice medicine in France.

To understand how the resistance to inoculation continued to spread and then began to slowly lose ground, and to see the extent of inoculation, we must turn to a consideration of the early practice of inoculation and examine the main reasons why it did not become universally established in France during the mid-eighteenth century.
NOTES


3 This point is also made by Nogaret, p.851.

4 Unlike the other faculties of the University of Paris, the Faculty of Medicine was not only a teaching corps, but also supervised medical-police measures, drug inspection, the water supply, medical-legal questions and the adulteration of basic foodstuffs. For a limited discussion on this point, see Paul Delaunay, Le Monde médical parisien au XVIIIe siècle (Paris, 1906), pp.38-39.

6. Bariéty and Coury, pp.483-84; Delaunay, passim.


10. Nogaret, p.856, wrote: "Par les biais de l'anoblissement qui fait au XVIIIe siècle la plus belle part au mérite personnel, par celui des charges de cour largement ouvertes à la renommée et au talent, le médecin du XVIIIe siècle peut espérer se hisser au premier rang des élites reconnues, nonobstant son défaut de richesse, par la seule vertu de son zèle, de son savoir, de ses services." For a similar discussion, see J. Meyer, "L'enquête de l'Académie de médecine sur les épidémies, 1774-1794," Études rurales no.34, 1969, pp.7-69; and J.P. Goubert, Malades et Médecins en Bretagne, 1770-1790 (Paris, 1974), pp.127-181.

11. See Nogaret, p.854, who stated: "Au XVIIIe siècle les médecins de cour forment une élite étroite recrutée parmi les meilleurs spécialistes de l'époque. 16 d'entre eux furent anoblis et quelques-uns parvinrent à une grande fortune."

12. Delaunay, p.117.

13. Ibid., p.117.

14. La Condamine's memoirs are one of the primary sources for the early history of inoculation in France. For a limited discussion on Dodart see La Condamine, "Mémoire sur l'inoculation de la petite vérole," Histoire de l'Académie Royale des Sciences (Paris, 1754), pp.618-19.

15. Ibid., p.620.

16. Ibid., pp.621-22. See also La Condamine, "Second Mémoire sur l'inoculation de la petite vérole, contenant la suite d'histoire de cette méthode & de ses progrès de 1754 & 1758," ibid., p.444.
Boerhaave's Aphorisms: concerning the knowledge and Cure of Diseases. Translated from the last edition printed in Latin at Leyden, 1715. With useful observations and explanations, by J. Delacoste M.D. (London, 1715). Cited in Lanson, p.140. This work had popularized the medical view that a mixture of mercury and antimony produced a long-sought remedy against the "poison" which caused smallpox which, in turn, became the rationale for the use of these substances as preparatory medicines.

It has been suggested, however, that Delacoste served as the agent to spread reliable medical information when he forwarded J.C.A. Helvétius, the physiologist, and first doctor to the Queen, latest work, Idée générale de l'œconomie animale et observations sur la petite vérole, that stressed the classical humoral theory, to the Royal Society in 1722. See Geneviève Miller, The Adoption of Inoculation for Smallpox in England and France (Philadelphia, 1957), pp.182-83.


Lanson, p.148.

Delacoste, p.1073.

Ibid., p.1077.

Ibid., p.1085.

Bariéty and Coury, p.554.

Delacoste, p.1085

Ibid., pp.621-22.


Ibid., p.647.

Ibid., p.647.

Ibid., p.648.

See the discussion on the term "empiric" in the introduction and in chapter one.


Ibid., p.317.

Delaunay, pp.208-17, passim.

Ibid., pp.208-09.

Bariéty and Coury, p.590.

Avis sur le dessein de ce petit ouvrage. Preliminary note.


Ibid., p.415.


Lanson, pp.130-151.

Ibid., p.131.
Chapter III

THE EARLY PRACTICE OF INOCULATION AND
ISSUES IN ITS SLOW GROWTH

In April 1721, as we have seen, Lady Montagu had her daughter inoculated in London, and from this date onwards inoculation came into fashion among the aristocracy and gentry, particularly after the court had witnessed the inoculation of two royal members Amelia and Caroline in April 1722. According to the inoculation censuses conducted by Jurin and Scheuchzer during the 1720s, there were 897 inoculations in England during the years 1721-28. After 1728 no attempt was made to count the number of inoculations, which led La Condamine to conclude that

On les entend dire froidement & avec ingénuité qu'aujourd'hui cette méthode est abandonnée en Angleterre, tandis qu'elle n'y fut jamais plus accréditée.

This conclusion has been confirmed by Genevieve Miller who has argued that at no time did inoculation cease to be practiced, and cited the examples of inoculations taking place in Haverford West, Pembrokeshire in 1732, in Bury and Dumfries, Scotland during 1733, and in Ireland in 1734. However, she also pointed out that "the number of publications on the subject declined, so that
during the 1730s one finds only a few pamphlets and occasional journal articles."  

This hiatus in information coincided with an apparent numerical decline of publications on inoculation by English writers in French learned periodicals during the 1730s and 1740s. And it was not until 1759 when the secular Journal des Savants said: "Aujourd'hui nous pensons que tout ce qui vient des savants anglais est supérieur à ce que nous possédons..." that the editor of the journal, Berthier, decided to increase the number of English medical reviews. In addition, the decline of inoculation was noted approvingly by La Mettrie - the former disciple of Boerhaave who persistently alluded to the "great art of healing" as man's noblest activity in L'Homme Machine - who argued in a treatise on smallpox published in 1740 that "Il est donc évident que cette pratique est en soi pernicieuse, & que les Anglois ont fait sagement de l'abandonnée."  

Whatever the changes in the extent of inoculation and the number of journal articles during the 1730s and 1740s, contemporaries were unanimous on the insignificance of the practice at any time during this period. Apart from the severe epidemic which struck the people in Paris (1723), France in general encountered only a few isolated ones such as in Lodève in 1736, Marseilles in 1741, and Montpellier in 1744 and 1745, but there was no general
pandemic.

Despite the fact that France lacked reliable statistical studies like those of the London Bills of Mortality - to demonstrate how the outbreaks of smallpox caused the death-rate to exceed the birth-rate - it may have been due to the relatively low annual death tolls from smallpox. Hence, a priori one may believe that the population as a whole did not show an interest in the practice because they were not alarmed by it as a great danger. Since the fear of contracting natural smallpox was not considered to be as serious as the possibility of contracting it from inoculation, it was not necessary to advance the practice. The psychology of this attitude is not difficult to understand, for a remote risk, however dangerous, is often preferable to an immediate one. For example, this point was noted by D'Alembert in 1760 when attempting to explain why inoculation was not gaining ground:

\[
\text{Si l'inoculation peut faire perdre la vie, et en même temps elle préserve de la petite vérole naturelle, le parti que doit prendre tout homme sage est de ne donner de conseil à personne ni pour ni contre cette opération...le reste de crainte qu'il peut toujours avoir, de donner par l'inoculation une mort pré-maturée à quelqu'un des ses enfans, et peut-être à celui qui lui est le plus cher, ne peut pas avoir assez de force pour le faire balancer.}\]

Such an attitude could flourish only where there was a known risk of dying from inoculation, and the practice of inoculation was still considered to be fairly dangerous
during the period under discussion.

Another important factor in the early rejection of inoculation was the stubborn opposition to the absorption of new English intellectual ideas. La Condamine wrote in 1754:

Cette pratique est presque inconnu en France... Ce n'est pas le seul exemple qui prouve combien le Public est mal instruit en France des nouveautés utiles au progrès des sciences & des arts, & même au bien de l'humanité, quand elles prennent naissance hors du royaume.

Perhaps, the widespread resistance to inoculation was only a symptom of the underlying fearful defensiveness against all new foreign ideas.

The most effective offensive against traditional modes of thought and action in eighteenth century France was firmly grounded in the program of the philosophe movement. For the observant philosophes, the possibilities of an Enlightenment manifested themselves not so much in the rise of the natural sciences such as Newtonian physics and astronomy, but in the achievements of medicine. The Encyclopédie, the most important enterprise of the philosophes, popularizing literary, historical and "scientific" information, enlisted a corps of natural scientists, academicians and medical men such as the naturalist Daubenton, the botanist Le Monnier and Quesnay, by profession a surgeon and founder of physiocracy, to spread reliable new knowledge of immediate practical concern to French society as a whole.
As a result of this new program, the first important change in the fortunes of inoculation took place on 14 April 1754 at a public meeting of the Académie des Sciences when La Condamine read his "Mémoire sur l'inoculation de la petite vérole," and therefore launched his campaign on behalf of inoculation against smallpox. Carefully documented on the basis of extensive reading, it was clearly the work of long reflection and not of sudden impulse. La Condamine took a very strong position and, after recalling the misfortunes caused by smallpox made his attitude clear in these introductory and challenging remarks:

L'inoculation, préservait sûr, avoué par la raison, confirmé par l'expérience, permis, autorisé même par la religion, s'offre à nous pour arrêter le cours de tant de maux & semble demander à la politique d'être mis à la tête des moyens propres à conserver & à multiplier l'espèce humaine. Qui peut nous empêcher de recueillir les fruits de ce bienfait de la providence?

The most important aspect of his memoir focused on the position taken by anti-inoculationists who believed that inoculation was morally wrong. They claimed, as we have already noted, that as it sometimes caused death, it meant deliberately and needlessly exposing one's life. Since this was considered to be an interference with God's will, it was one that was forbidden to religious people. La Condamine did not question the statement that on occasions death resulted from inoculation. Instead he chose to base
his discussion on statistical data obtained from inoculators working in different regions of England during the 1746 epidemic.

These statistics showed that the probability of death from inoculation was one in three hundred and seventy-five. But what, he asked, were the probabilities for those who had not been inoculated? To find an answer, he cited the results obtained by Jurin who examined more than 900,00 Bills of Mortality in London from 1667-1687 and from 1701-1722. After setting aside children who died before the age of four years, which was then considered the earliest age for children, Jurin found that one person in seven died from smallpox. On the basis of these figures, La Condamine argued that,

En inoculant votre fils, contre trois censsoixante-quinze événemens heureux, il en est un à redouter: en ne l'inoculant pas, il y a plus d'un à parier contre sept que vous le perdez. Ce dernier risque est cinquante fois plus grand que l'autre: choisissez maintenant, & balancez encore si vous l'osez.

Consequently, he appealed for its introduction into France. He exhorted the learned community as a whole, its spiritual leaders and its magistrates to diffuse knowledge of this practice so as to insure its ready acceptance:

C'est donc aux facultés de théologie & de médecine, c'est aux académies, c'est aux chefs de la magistrature, aux savans, aux gens de lettres qu' il appartient de bannir des scrupules fomentés par l'ignorance, & de faire sentir au peuple
que son utilité propre, que la charité chrétienne, que le bien de l'État, que la conservation des hommes sont intéressés à l'établissement de l'Inoculation.18

His address caused a revolution, according to Baron Grimm, the German literary and social observer, who held the philosophe point of view.19 La Condamine renewed the interest in inoculation which had been dormant for over thirty years and, by his courage and authority, became the rallying point of those who favored it. At the same time, he crystallized opposition and became the target of anti-inoculationists who suddenly increased in numbers.

Immediate support for inoculation came, understandably, from those who favored the diffusion of new ideas, whether "scientific" or philosophical. Moreover, the Journal des Savants gave a favorable account of La Condamine's memoir, and claimed that,

L'auteur a prévenu dans ce "Mémoire" toutes les objections qu'on pouvait lui faire, & il se sert de ses avantages avec tant d'esprit & d'éloquence qu'il y a tout lieu d'espérer que les personnes les plus opposées à cette pratique, si utile au genre humain, se laisseront enfin entraîner par la force de ses raisons & échauffer par l'ardeur de son zèle.20

Fréron, in L'Année Littéraire, wrote of his work with great enthusiasm and included a recent article from the London Gazette:

On sçait depuis long-temps que l'Angleterre a été la première à secourir le joug du préjugé contre l'Inoculation de la petite Vérole. Mais, après l'opposition générale
que cette méthode a rencontrée de la part des François, on a été surpris d'apprendre que M. de la Condamine, de l'Académie Royale des Sciences, ait eu le courage de s'en déclarer l'apologiste. On a lu ici avec avidité la dissertation qu'il a présentée sur ce sujet à l'Académie. On en a trouvée toutes les raisons déduites avec beaucoup de solidité, & les conséquences tirées avec beaucoup de justesse & de connaissance de matière qu'il y traite.21

To this array of compliments should be added the review of the "Mémoire" published in the Journal de Trévoux. His argument in favor of inoculation, his refutation of moral and medical objections to it, all were accepted without question. The anonymous reviewer's only complaint was that he lacked the space to write adequately of the memoir:

Il faut supposer que nous ne représentons pas la centième partie de ce qu'il vaut en lui-même. Et en ceci nous ne faisons point d'éloge; nous rendons justice.22

By 1755, the "enlightened" segment of the medical profession began to make serious efforts to familiarize doctors, surgeons and, to some extent, the urban poor with the benefits of inoculation. As we have seen, the medical profession itself had been originally divided over the subject of inoculation, but in that same year, Ambroise Hosty, an Irish docteur-régent of the Paris Faculty, was dispatched across the Channel in order to study inoculation.23

During his three month visit in England, Hosty was privileged to exchange views with the doctors and surgeons of the English court as well as others prominently engaged in the practice or its publicity such as Kirkpatrick
and Maty. Moreover, Hosty had witnessed 252 inoculations, both at the Inoculation and Foundling Hospitals and wrote:

Des 252 personnes dont j'ai suivi l'inoculation, deux seulement m'ont paru en danger; l'un étoit le fils du Major Jenning...âge de 3 ans & sa gouvernante âgée de 23 ans.

Hosty also pointed out the rarity of secondary contagion from inoculation, an argument based on the grounds that inoculation would spread to the unprotected population:

Je ne trouve pas un seul exemple qu'une personne qui ait eu la petite vérole bien caractérisée par l'inoculation l'ait eue une seconde fois; cela est fondé sur plusieurs expériences réitérées & bien avérés.

Contemporaries, as we shall see later, continued to strongly disagree about the incidence and the extent of the danger of secondary infection at least until the late 1780s.

There was also popular opposition to inoculation on medical grounds, though like the belief in the highly contagious nature of the operation, it was not always based on an objective foundation. Andrew Cântwell, a doctor of Irish extraction who had taken a degree at Montpellier and settled in Paris in 1735, published a work in 1755 designed to discredit the practice. He stated that he had originally favored inoculation. In 1729 he first performed the operation clandestinely at Montpellier and then in Avignon. During 1734-35 he claimed to have inoculated four patients successfully in
But he could no longer be resolved to inoculate his clientele and noted:

Je me suis trouvé en plusieurs occasions différentes & j'ai appris d'un grand nombre de personnes plusieurs accidents funestes qui m'ont enfin ouvert les yeux sur le danger d'une pratique qui m'avoir d'abord paru si avantageuse.

As evidence, he cited a number of cases at Montpellier, Ireland and from professors at the Paris Faculty of a secondary infection among inoculated cases and he added "qu'on peut être attaqué plus d'une fois de la petite vérole." Moreover, he could not refrain from claiming that measles and chicken-pox were in effect light cases of smallpox. This type of mistake occasionally occurred, especially because smallpox in Paris did not return regularly every few years, and it was therefore possible to confuse individual cases of smallpox with other diseases such as measles and chicken-pox.

The removal of checks on the spread of inoculation was, to a considerable extent, due to the reduction of mortality as a result of the improvement of technique. The spread of the practice was relatively rapid among the upper social classes after Louis-Phillippe had his two children, the Duc de Chartres and Mlle. de Montpensier inoculated by Tronchin in March 1756. The latter point is illustrated by a contemporary description of the effect of the successful Tronchin method:

M. Tronchin est l'homme le plus à la mode qu'il y ait actuellement en France...Enfin, pour nous achever de peindre, nos marchandes de modes ont inventé une coiffure qu'elles
In fact, the Tronchin method was the beginning of a quasi-popular practice of inoculation. Fashionable Parisians, comprised of titled nobility and high-ranking government officials eager to adopt a life-saving technique sought out Tronchin's consultation and care. The Marquis de Villeroi, the Comtesse de Forcalquier, and Turgot were among the famous clientele that he attended to while in Paris. Moreover, the practice of inoculation was spreading throughout the provinces, particularly in large towns, which led La Condamine in 1758 to estimate that,

On peut compter depuis quatre ans en France au moins deux cents personnes inoculées: la moitié sont des adultes pour le danger de la petite vérole est plus grand que pour les enfans.

Yet, in order for the popular practice of inoculation to be possible, it was necessary for the price of inoculation to be radically reduced. Unfortunately, this was not carried out by the popular inoculators such as Tronchin and Gatti. For the royal inoculations alone, Tronchin had procured, "dix mille écus argent comptant, outre des boîtes d'or et d'autres bijoux." This illustration of clientele fees was probably not untypical of the period.
Inoculation was so expensive at the time because of the period of preparation, the sometimes complicated procedures of blood-letting and purging, as well as the special medicines prescribed by attendant medical men. Hence, the price of inoculation during the years 1756-1775 was too high for the great bulk of the population.

And the relatively high price of inoculation continued to deter the rural masses from undergoing the operation. For example, in Brittany as late as 1786, the subdelegate of Châteaubriant remarked:

Il est impossible de se servir de l'inoculation dans les campagnes et parmi le peuple qui n'a pas de commodités et les facultés suffisantes. C'est une opération qui n'est profitable qu'aux riches et tout à fait préjudiciable aux autres.37

But not all medical practitioners were concerned about financial success. In fact, one medical man was concerned about the neglect of the poor in Paris, and he attempted to remedy this situation by formulating plans to set up a popular charitable institution for inoculating the poor, as is shown by an advertisement which appeared in L'Année Littéraire:

C'est cette conviction qui m'a engagé à élever un Hospice pour l'inoculation, tant pour l'utilité que la sûreté publique. Je dis pour l'utilité publique, parce qu'un grand nombre de Citoyens n'ont pas de maisons de campagne & que l'Inoculation devient très-couteuse, lorsqu'il s'agit de déplacer tout un ménage. Par l'établissement de cet Hôpice, on se procurera, moyennant un prise honnête, ce qu'on n'aurait obtenu qu'à grands frais & avec beaucoup d'embarras.
Plusieurs personnes ne peuvent quitter leurs affaires ou leur commerce pour suivre leur famille qui voudroit se soumettre à l'Inoculation. A présent, sans se déplacer & sans interrompre le cours de leurs affaires, les parens pourront mettre leurs enfans, dans cet Hospice, où ils jouiront de tous les égards qui leurs sont dus. Pour faire voir que c'est le seul intérêt public qui me touche, je laisse chaque personne maitresse du prix qu'elle voudra donner.38

This appears, however, to have been an isolated humanitarian charitable gesture and plan to introduce differential prices according to the financial circumstances of the patients during the period of discussion.

When inoculation was introduced by medical practitioners in France between 1754-1760, it was not thought to be contagious to those who had already had smallpox. Tronchin from his experiences in Geneva concluded that inoculation was not infectious in the way that natural smallpox was, but he was soon to be challenged by anti-inoculationists for, according to Hosty, "ils ont été réduits par l'évidence des faits, à cette seule objection, qu'elle ne garantit pas de la petite vérole naturelle; aussi s'efforcent-ils de faire valoir leur unique ressource."39 In 1756, Tronchin inoculated a young boy by the name of Delatour living in Paris; Gaullard, his uncle and medical practitioner in Paris, concluded that,

le jeune de la Tour a eu une seconde petite vérole véritable qu'il avoit donc été inoculé en pur & qu'ainsi l'inoculation ne préserve pas de la rechute.40
In fact, the argument was of primary importance to the French public in general for it suggested that secondary contagion did arise in France, and that inoculated small-pox was merely a variant of the natural form, and as we saw in the first chapter, that the success of inoculation was due to the possibility of "managing" the disease as well as selecting a milder form of the virus with which to inoculate people.

The contagiousness of Delatour's inoculation was questioned by the Duc d'Orléans in 1759 who, in turn, sent a commission of four doctors from the Paris Faculty to report on this key issue. The commission concluded:

Que le jeune de la Tour avoit une maladie de la peau, connue & distinguée par la petite vérole, long-temps avant que l'inoculation fût pratiquée en Europe, une éruption crystalline & sérieuse qui se termine sans suppuration...cette maladie est entièrement différente de la petite vérole.41

Although the Delatour incident refuted the arguments directly on the question of secondary contagion, the debate over this danger continued throughout the mid-century.

An important issue retarding the spread of inoculation was the opposition due to religious opinion. In 1757 an anonymous critic in the Jesuit Journal de Trévoux, convinced that mankind was determined by the forces of nature over which it had no power, noted the following moral objections and rebuked the mathematical calculation gradually being formulated by the propagandists for inoculation:
La vie sauvee à mille citoyens ne justifie pas le meurtre d'un seul; on n'a pas droit d'allonger leur trame, aux dépens de la sienne; le mal de l'un ne se répare, ne s'expie point parle bien des autres. La Morale ne trouve pas son compte doivent pas l'emporter sur la discipline des mœurs; les règles de la Morale sont plus précieuses à l'Etat que les maximes se trouvent en opposition, ce sont les systèmes de la Politique, qui doivent plier sous les loix de la Morale.42

More important than formal religious opposition or the common philosophical objection though was popular prejudice against inoculation which, although couched in religious terms, was in effect a reflection of emotional attitudes towards death, and the anxiety about incurring deliberate risks for a future remote gain. The anonymous critic went on to conclude that,

Donner à quelqu'un qui se porte bien, une maladie que probablement il n'auroit jamais eue, une maladie factice qui peut le tuer, c'est se jouir de la vie des hommes; c'est faire violence à l'ordre, à l'humanité; c'est entreprendre sur les droits de la Providence par un moyen illicite & par une opération diabolique.43

Partly as a result of this prejudice, the first major step toward making the practice universal was checked.

Opposition to inoculation on religious grounds never entirely disappeared at any time during the period under discussion; for instance, one anonymous writer stated in 1763:

En effet, toute innovation, soit dans la Religion, soit dans la Médecine, est d'une dangereuse conséquence. Donner un mal certain pour le guérir par un remède pour le moins incertain, & qui peut entrainer des
suites fâcheuses, ce système me paroit contraire au bons sens, à l'humanité, à Religion.\textsuperscript{44}

However, religious opposition was not strong enough in itself to retard the spread of inoculation throughout French society as a whole.

During the course of the eighteenth century, learned men in French society gradually formulated a mathematical doctrine of what had so far been merely rules of logical thought. This ascendancy of precise information in numerical forms, which ultimately led to the development of the calculus of probability, consisted basically of an attempt to apply a certainty principle to the inductive method of reasoning.\textsuperscript{45} In the attempt to prove that inoculation was in fact grounded on probable truth, La Condamine pointed out:

Il n'est donc plus question ici de morale ni de théologie, c'est une affaire de calcul: gardons-nous de faire un cas de conscience d'un problème d'arithmétique.\textsuperscript{46}

Furthermore, the partisans of inoculation believed that facts, reasoning and a systematic inquiry into mathematical calculation would be the most cogent proof for accepting the practice and that it would counterbalance religious opposition.\textsuperscript{47} Hence, they sought to prove statistically that inoculation did protect people. It was not by accident that the statistical method was applied to medicine during this period since a growing number of learned men within the Académie des Sciences believed that
inoculation was capable of mathematical abstraction and manipulation as evidenced by the activities of the mathematicians and academicians: La Condamine, Daniel Bernoulli and D'Alembert - who played a key role in its controversy and development.

In reply to La Condamine's enlightening question: Who runs a greater risk of death, a healthy individual who waits for smallpox to seize him, or one who prevents it by being inoculated? Daniel Bernoulli, a foreign associate of the Académie, stated in 1760:

Elle n'appartient, comme le voit, ni à la Médecine ni à la Théologie, C'est une question de fait, mais compliquée, & qui ne peut être résolue que par la comparison d'un grand nombre de faits & d'expériences, d'où l'on puisse tirer la mesure de la plus grande probabilité. Le risque de celui qui attend la petite vérole est en raison composé du risque d'avoir un jour cette maladie, & du risque d'en mourir s'il en est attaqué. Le risque tout composé qu'il est appréciable, & sa détermination dépend du calcul des probabilités, qui, comme on fait, est une des branches de la Géomètre.49

Consequently, Bernoulli undertook the task to study the mortality rates caused by smallpox at various ages and the results were reported to the Académie on 30 April 1760.49 Bernoulli's general conclusions were that inoculation, though it did involve a risk, could lengthen the life span of human beings by approximately three years; and secondly, that one stood a better chance of contracting smallpox during early childhood. D'Alembert, the co-founder of the Encyclopédie, read to the Académie on 12
November 1760, an elaborate memoir which argued against his analytical method and concluded:

Enfin les hypothèses de ce grand géomètre sur le risque de l'inoculation ne sont peut-être pas plus exactes; il faudrait savoir si cette opération emporte toujours comme il le suppose, la même partie des inoculés, à quel âge, qu'on les inocule. 50

In refuting Bernoulli's research, D'Alembert was, in fact, unable to fully understand what could be achieved by the application of probability theory. Despite the earlier work of Huyghens, Laplace and Jacques Bernoulli, D'Alembert refused to acknowledge that the calculation of probabilities was a legitimate branch of mathematics. 51

In mathematics he wanted to be absolutely certain and precise, and on the subject of inoculation he wrote:

J'avouerai cependant que s'il n'y avait que des difficultés de cette espèce qui empêchassent de fixer par le calcul les avantages de l'inoculation, ces difficultés n'auraient lieu qu'à raison de l'imperfection actuelle de nos connaissances sur cette matière, et le petit nombre d'observations certaines qu'on a recueillies jusqu'à présent. 52

As long as this attitude persisted, it was difficult for D'Alembert to acknowledge the "scientific" character of methods encompassing probability and of advancing the practice of inoculation.

It must be pointed out, however, that D'Alembert was not in fact opposed to inoculation. But he did increase each individual's fear of the risks of inoculation:

Qu'on peut mourir de la petite vérole artificielle; elle voit l'inoculation comme un péril instant et prochain de
And, it was due to this kind of statement that led Diderot in 1761, through his interest in preventing smallpox, to write a critique of D'Alembert's memoir on inoculation. As a partisan of inoculation, he believed that D'Alembert was jeopardizing the best interests of French society in general:

On a trop confondu, dit M.D'Alembert, l'intérêt public avec l'intérêt particulier. Cela se peut, mais celui qui apprend aux hommes à séparer ces deux intérêts est un bon géomètre, à la bonne heure, mais un très-mauvais citoyen.

Economic considerations were gradually becoming of primary importance in shaping the position of governmental authorities toward the inoculation of the urban and "sick" poor. La Condamine believed that the deliberate immunization against smallpox could play an important role in the saving of human lives. In the first memoir, he estimated:

De vingt mille personnes qui meurent par an dans Paris, cette terrible maladie en emporte donc quatorze cens vingt-huit. Sept fois ce nombre des malades de la petite vérole à Paris, année commune. Si tous les ans on inoculait en cette ville dix mille personnes, il n'en mourroit peut-être pas trente, à raison de trois par mille; mais en supposant contre tout probabilité qu'il mourût deux inoculés sur cent au lieu d'un sur trois ou quatre cens, ce ne seroit jamais que deux cens personnes qui mourroient tous les ans de la petite vérole, au lieu de quatorze cens vingt-huit. Il est donc démontré que l'
Undoubtedly, he was appealing directly to the economic interests of France as a whole. This program is of historical significance because it provides an important clue to explain why certain "enlightened" governmental authorities began to show a growing interest in new measures to mitigate smallpox.57

By the mid-century, "enlightened" governmental authorities increasingly turned their attention to the issues of health and social policy derived from their approaches to political economy. The theory and practice of political economy dealt with such key issues as agricultural productivity, population policy and poor relief.58 Among political economic ideas, the concept of increased agricultural productivity was one of the most fundamental and important during the period under discussion.59 In short, increased agricultural productivity required a large and growing population, but the advantages of this resource could be achieved only by having as many of the people as possible productively engaged. Hence, the larger question of productivity rested on the understanding of health-related problems that concerned the poor.60 In this connection, the importance of adequate medical care in rural areas was now recognized as one of the main objectives...
in the measures for the maintenance of a healthy population capable of productive labor which, in turn, contributed to the wealth and power of the state.  

In light of the significance of a healthy and growing population for the state, Montyon, the celebrated statistician, as late as 1778 concluded that,

> il [the king], doit soutenir le pauvre par des réglements, l'éclairer par des instructions, le secourir par des dispositions libérales; mais quel que soit le régime ministériel, il faut que d'une manière quelconque la nourriture du peuple soit assurée, si l'on veut prévenir les pertes qu'éprouve la population, par la quantité de pauvres que fait périr le manque d'aliment ou la mauvaise qualité des denrées dont ils sont forcés de faire usage...

It appears that the relief of the poor was an important policy to be carried out through the agency of the state, particularly since the poor comprised part of its wealth. In this respect, "enlightened" governmental authorities believed that such a measure to improve health must deal equally with the economic, social and medical aspects of the problem.

Unlike England which could rely upon the London Bills of Mortality and parish registers for their statistical calculations to counterbalance theological disputes, La Condamine lamented that vital statistics such as mortality lists, studies on medical-topographies and meteorological observations had not been recorded in France for more than a century:
Si nous avions depuis un siècle en France comme à Londres, & en quelques autres villes de l'Europe, des listes mortuaires qui nous instruisent non seulement du nombre des morts, mais de leur âge & de la maladie à laquelle ils ont succombé, outre les conséquences qu'on en pourrait tirer pour résoudre divers problèmes politiques & moraux, il est évident que la comparaison de semblables listes données en divers pays nous apprendroit que telle ou telle maladie est plus ou moins commune en tel ou tel canton, plus ou moins dangereuse en tel autre & que nous tirerions de-la de nouvelles lumières sur l'influence du climat, sur la nature des aliments, sur l'efficacité des différents remèdes & sur les diverses méthodes de traiter une même maladie en différents lieux.63

D'Alembert, too, insisted that doctors in every town keep precise records of their smallpox cases in regard to temperament, age, season and so forth, so that,

Ces données au public par les Facultés de médecine ou par les particuliers, seraient certainement d'une utilité plus palpable et plus prochaine que les recueils d'observations météorologiques publiés avec tant de soin par nos Académies depuis 70 ans.64

The French proponents of inoculation, however, were forced to rely entirely upon English data, the most recent being the annual reports of the London Smallpox and Inoculation Hospital which were sometimes reprinted in standard periodicals.65

Since knowledge was clearly designed to be the ornament and tool of authority, new institutions, if they were going to survive, had to serve the nation rather than form it. In this respect, the French partisans stressed the need for governmental support for the practice of
inoculation. Economically speaking, this meant that population constituted part of its wealth and therefore the governmental authorities should contemplate and adopt a new measure like inoculation. Unlike England, there was no organized system of poor relief at the hospital or parish level for the free inoculation of the poor. Hence, in order to stimulate the governmental authorities to act on behalf of inoculation, a proposal was advanced which suggested that the government establish an inoculation hospital to overcome this problem. According to Bachaumont, the social critic and literary observer of Parisian society, the Hôpital Saint-Louis was proposed. But he pointed out that the governmental authorities showed little interest in putting forward new legal measures to establish an inoculation hospital:

Au reste, ceci ne paroit encore qu'un projet répandu dans le public suivant l'usage, pour fonder ses dispositions, & le préparer insensiblement à le recevoir. Il éprouvera, sans doute, beaucoup de contradictions & de discussions, comme en éprouvent en France tous les établissements nouveaux, même les plus avantageux, & celui-ci a de puissans adversaires dans le sein de la Faculté même, non que parmi les gens instruits il puisse se trouver des détracteurs de bonne foi, mais parce que la passion & la cabale influent sur tout, & que l'amour-propre combat encore par opiniâtreté en faveur d'un mauvais système, même lorsque l'esprit est convaincu.

The attempt to establish a hospital which could have been used for the inoculation of the poor such as the Hôpital Saint-Louis was significant in that it showed how learned
men in general were slowly grasping a knowledge of isolation and quarantine measures for the purpose of controlling a contagious disease. In addition, the practice of inoculation could have become popular in large towns like Paris if the establishment of special institutions such as the Hôpital Saint-Louis for the inoculation of the poor had occurred.

Although "enlightened" governmental authorities recognized the need of the state for positive action in relation to policies and measures intended to foster good health and population growth, it was clear that the population question was not a simple matter of mere numbers, but a more complex problem whose solution was grounded on measures calculated to improve health-related conditions of the poor. Moreover, the prevalence of inadequate medical care and unequal distribution of medical personnel served as major obstacles to an increasing healthy population and governmental action to relieve the suffering masses during the period under discussion.

Despite the efforts which Turgot's administration launched against epizootic and epidemic diseases in the 1770s to bring order and, whenever possible, solutions to medical problems, the problem of poor relief was further exacerbated by the high price of treatment demanded by practitioners and parsimoniousness among local authorities. By the late eighteenth century, the basic principle of medical care in France was that poor relief should be provided on a local scale as far as possible. Each community
was supposed to care for its own "sick" poor and in some instances, poor relief was provided by the Church. 71

The unsatisfactory nature of the type of provision of poor relief in some of the small towns was noted by the priest of Murlin in 1783:

Most poor parishioners... don't dare turn to the surgeons, who charge too much for their travels and their remedies. I see sick people visited five times and treated with some ordinary remedies, for which surgeons living just a league away are paid forty-four pounds. 72

It appears that this kind of high price of poor relief was not untypical of the time. This type of expenditure was obviously a disincentive for parish authorities to provide relief to the "sick" poor as late as the 1780s.

Moreover, Robert Heller recently pointed out, in a study of German society, one of the reasons why public institutions failed to deal effectively with poor relief at the local level:

Although the members of the French rural clergy, as everywhere else in Europe, gave medical aid to their parishioners individually, when needed, there existed no scheme during the ancien régime to integrate them into a system for the medical care of the poor which was administered or at least initiated by the state. 73

In fact, the provincial or royal authorities stepped in only when problems of relief were too large for the local community to handle. This usually took place during the period of widespread epidemics in which the medical personnel were dispatched to the ravaged area. 74 Yet it
must be remembered that the problem of medical personnel was not limited to periods of epidemic outbreaks. Throughout the eighteenth century, contemporaries lamented that there was a great shortage of learned doctors and surgeons in the rural areas.  

Fully aware of the inadequacies of medical practice, Montyon strongly urged that more attention be paid to making available the services of competent doctors and surgeons. According to Montyon, C'est encore un problème de savoir si la Médecine détruit plus d'hommes qu'elle n'en sauve. Dans les grandes villes où sont établis les Médecins les plus habiles à les plus expérimentés, le résultat des secours qu'ils administrent doit être supérieur à celui de leurs fautes.

This, however, was apparently not the case in small towns and rural areas as he noted:  

...Mais dans les petites villes & les campagnes qu'habitent les Médecins qui ont le moins de sens, de talent & d'expérience, il seroit plus sage, au dire même des plus fameux Docteurs, de s'en rapporter à la nature & d'expulser une foule de charlatans reçus ou non dans les Facultés, qui vendent à la faiblesse crédule & stupide leurs erreurs & la mort.

Moreover, Montyon indicated that in addition to curative medicine there was a preventive medicine; associated with the Royal Administration — la police générale — which was "essentielle à la conservation de la santé publique."  

While this branch of medical practice had been recognized and applied with some beneficial results in France, he wrote directly on the need for better environmental sanitation in terms of housing and improved diet for the poor:
Que de maladies on doit encore à la mauvaise construction des maisons, de celles qui sont au niveau des terres, ou qui y sont inférieures, de celles qui n'ont pas suffisamment d'ouvertures pour laisser un libre cours à l'air le moins sain; le danger est encore plus grand dans les maisons construites de pierres de plâtre, ou de torchis, qui dans des temps d'humidité exhalent une vapeur souvent invisible, mais toujours nuisible & pernicieuse: une source de destruction plus séconde encore, est la mauvaise qualité des aliments, des boissons, des eaux saumâtres, douces, terreuses, chargées de parties métalliques, le vin ou le lait aigri, boisson ordinaire des campagnes, la viande gâtée (le pauvre cultivateur n'étant pas en état d'en consommer de meilleure) les fruits verts, la misère ne permettant pas d'attendre la saison de la maturité.  

Indeed, Montyon's views and goals were shared by many contemporaries who increasingly looked to the state for positive measures and policies in dealing with health-related problems and society. Health, in short, became associated with improvements in living conditions and nutrition and its maintenance became the task of "enlightened" governmental authorities and medical men. As we have already noted, it was becoming clear - at least in terms of "enlightened" opinion - that improvements in public health were an obligation of society to be carried out through the agency of the state.

The remaining issue checking the practice of inoculation was the fear that it would spread smallpox to unprotected people. This invariably led to certain forms of prohibition of the practice. In the autumn of 1762 a severe smallpox epidemic afflicted the town-dwellers in
Paris and continued into 1763. Alarmed by the unabated spread of smallpox in Paris, anti-inoculationists claimed that its unusual duration was to be ascribed to the increasing practice of inoculation — a charge which, though most unjust, was yet plausible because inoculation was capable of spreading smallpox. For example, Angelo Gatti described the ways in which the contagion spread during this period:

L'hôtel-Dieu, qui se trouve au centre de Paris, renferme le plus souvent 2 ou 300 malades de la petite vérole; les enfants du peuple couverts de boutons, dégoutons de cette maladie, se promènent dans les rues, jouent indifféremment avec ceux qui ont eu la petite vérole ou non. Les Médecins, les Chirurgiens, les Prêtres, les garde-malades au sortir d'une maison, dans laquelle peut-être les uns sont morts de la petite vérole, les autres moribonds, les uns estropiés par des ulcères qui achevent d'infester avec la puanteur de leur matière sanieuse, l'air empoisonné des malades de la petite vérole couverts de pied en cap d'une croute hideuse; tous ceux qui, ainsi que les domestiques & c., au sortir d'une pareille maison entrent dans une autre, peut-être dans quartier où la petite vérole n'existe pas encore, y portent l'épidémie sans que personne se récrie contre ces abus.

On the basis of this contemporary observation, it was clear that isolation, quarantine and any other public health measure to prevent the spread of smallpox was sorely lacking at the time. It is also interesting to note that the townspeople in Paris seem to have been less careful when the disease was present in the area and of the marginal length to which people would go to avoid contracting it. Perhaps this was due to the fact that in large towns such as Paris the urban poor generally helped their neighbors.
and did not flee from the place where smallpox raged.

The reaction achieved its culmination on June 1763, when Omer Joly de Fleury, the avocat général in the Paris Parlement - an opponent of the philosophes who had previously banned the publication of the Encyclopédie - issued a requisitoire "par lequel il est fait défenses provisoirement de la pratiquer dans l'enceinte des villes & des faubourgs" until both the Paris Faculty of Medicine and of Theology had decided whether it should be permitted, forbidden or tolerated. Towns outside of its jurisdiction were still allowed to inoculate provided that patients remained in quarantine or isolation for a period of six weeks after their exposure. Since Fleury and many contemporaries believed that inoculated smallpox was highly contagious this was a very important practical issue, as it revealed how during an epidemic town authorities adopted measures to isolate inoculated cases from other members of the community.

The requisitoire of Fleury was viewed as something more than a mere matter of inoculation's social efficacy. It involved a query of primary importance, namely, whether the Church, represented by the Faculty of Theology, should have the right to legislate in a medical affair. The whole movement toward enlightenment was involved. D'Alembert wrote directly on the role of the Theology Faculty in the controversy:
L'inoculation n'est pas plus du ressort de la théologie, que les matières de la prédestination et de la grâce ne sont du ressort de l'arithmétique et de la médecine...La question de l'inoculation est sans doute bien plus du ressort de la Faculté de médecine que celle de Théologie.  

Voltaire also pointed out the interference of religion into medical affairs in his caustic satire of Omer de Fleury and wrote:

Et comme ce qui peut intéresser la religion ne regarde en aucun maniere le bien public et que le bien public ne regarde pas la religion il faut consulter la Sorbonne qui par état est chargée de décider quand un chrétien doit être saigné et purgé; et la Faculté de Médecine chargée par état de savoir si l'inoculation est permise par le droit canon.

But these fears were allayed when the Faculty of Theology declared that the issue was in fact medical and not theological.

In accordance with the réquisitoire, the Paris Faculty of Medicine in 1764 appointed twelve of its practitioners from both factions, in favor or adverse to inoculation, to form an investigative committee which in turn sent a questionnaire to doctors throughout Europe. This questionnaire was a significant aspect of the Enlightenment for it grew out of the government's need to obtain reliable medical information and advice on whether to accept or forbid the practice of inoculation. Assembling on a regular basis, the committee carefully studied and analyzed all the material so far written on the subject and tabulated the replies to its questionnaires which had
been received from prominent medical men such as John Huxham and John Pringle in England and Alex Monro in Scotland. The four queries were:

1. depuis quand on inoculait dans leurs pays, et avec quels résultats; 2. la mortalité de cette opération; 3. sa valeur préventive contre la variole; 4. les accidents concomitants et ultérieurs, et leur fréquence par rapport à ceux de la petite vérole.

According to Delaunay, the foreign correspondents sanctioned the practice of inoculation.

While Parisian society awaited the outcome of the inquiry, the committee made its own decisions. Interestingly, six doctors were in favor of at least tolerating inoculation outside the boundaries of large towns until more experimentation made it seem plausible to extend it throughout France, and six were sternly opposed to the practice. These two minority groups presented preliminary reports to the Faculty. The first was supplied by Guillaume Joseph de l'Epine, erstwhile Dean and leader of the anti-inoculationists party, on 29 August 1764. Representing the view of his fellow committee men, Jean Astruc, M.P. Bouvart, Th. Baron, Verdelhan des Moles and Macquart, L'Epine read his report which claimed that inoculation was a dangerous practice and capable of spreading smallpox:

La petite vérole est contagieuse; elle se gagne par attouchement, par communication, par fréquentation. On peut être attaqué plus d'une fois de cette maladie; les preuves de fait n'en sont pas rares. L'Inoculation ne garantit pas de la rechute;
On 5 September 1764, Antoine Petit, the celebrated anatomist and academician, read to the assembly his report in favor of inoculation with the support of his associates Cochu, Geoffroi, Lorry, Maloet and Thierry. Subsequently, a vote of the medical men present was taken which resulted in only the toleration of the practice.93

However, three separate assemblies and deliberations were required in order to obtain an authorized Faculty decree. This in turn enabled the anti-inoculationists party to oppose the practice on medical and religion grounds for the next four years.94 L'Epine's work appeared first in 1765.95 Addressed to the members of the Faculty, he presented a scholarly assessment of the main principles advanced by the partisans of inoculation and then refuted their arguments directly. For example, L'Epine echoed the religious prejudices against it and wrote:

Demander si l'on peut permettre ou tolérer l'Inoculation, c'est demander à quelqu'un qui se porte bien, s'il lui est permis de la donner une maladie dont il peut mourir & par conséquent s'il peut courir les risques d'être homicide de lui-même & de ceux qu'il pourra infecter par les emanations de son corps.96

In his own general and personal observations, L'Epine also noted that the practice of inoculation was indeed fairly
dangerous:

Madame de la Moignan, s'étant fait inoculer, à eu à la suite de la petite vérole que lui avoir procuré cette opération, au moment où elle se croyait guérie & quitte de la maladie, un dépôt si considérable à un genou, qu'après avoir résisté à tous les remèdes, il a été question de l'ouvrir; qu'on a long-temps appréhendé qu'elle n'en restât estropiée toute sa vie... Un des ses fils, inoculé en même temps qu'elle a eu une grosse fièvre, a été très-grièvement malade, & sur le point de périr.97

With the appearance of the work, foreign correspondents of England complained that their reports had been distorted and La Condamine remarked:

La Faculté de médecine de Montpellier, ni aucune autre du royaume, ni des Universités étrangères n'ont pas été consultées, non plus que le collège des médecins de Londres.98

These were not the only isolated accounts of the attempt by L'Epine and associates to discredit the practice as is shown in a letter to Fréron in L'Année Littéraire in 1765 from de La Moignon who claimed:

Ce récit est dépourvu de toute vérité. Madame de la Moignon a été inoculé le 28 Mars 1764. La petite vérole a paru le 5 Avril; le 10 elle s'est sentie de la roideur dans un genou, & s'est apperçue qu'au dessus du même genou il y avait de la rougeur; voilà le commencement de son dépôt qui n'a été totalement guéri que le 23 Mai. Ce dépôt, qui n'êtoyait pas fort considérable, n'a jamais été ouvert; des cataplasmes d'herbes émollientes & de mie de pain & de lait l'ont aidé à s'ouvrir de lui-même; pendant tout son cours Madame de la Moignon n'a eu que trois jours la fièvre le soir.99

Further on, he described another inaccurate account of the
symptomatic experience:

Ma fille ainée (& non un fils) inoculée le même jour qu'elle, c'est-à-dire, le 5 Avril; ce jourlà & les deux suivants, c'est-à-dire, le 6 & le 7, elle a eu la fièvre assez forte même la tête un peu embarassée; le 8 Avril elle s'est levée, & depuis s'est portée à merveille; sa santé s'est même fortifiée. Pendant les trois jours de fièvre, il n'y a jamais eu le moindre danger pour sa vie.100

These accounts, however, did not change L'Epine's view or the anti-inoculationist position about the degree of danger of inoculation to people.

In 1766, the pro-inoculationist position was published. It was in direct contrast to the scholarly document of L'Epine. Antoine Petit's celebrated report on inoculation was addressed to the French public in general rather than to the Faculty.101 As we have already noted, the dangers of the practice of inoculation were a very important practical issue as it would probably affect the outcome of the decision by the Faculty. Based on his own general and personal experiences in Paris and elsewhere Petit noted that death from inoculation did occasionally arise, but it was almost certainly a function of the inoculator's lack of skill and his imperfect method:

Quelques personnes sont mortes après avoir été inoculées, mais ce n'est pas l'inoculation elle-même qui les a conduites au tombeau, c'est l'inoculation pratiquée dans de mauvaises circonstances, c'est l'inoculation mal administrée.102

Although Petit did not question the possibilities of death from inoculation, the difficulty of defining precisely the
cause of death was a major problem confronting medical practitioners during the eighteenth century. Indeed, this must be kept in mind, for it is still with us today.

In addition, Petit pointed out the probable effects of inoculation in recent times by means of its mathematical calculations:

Il est démontré d'après les calculs les plus exacts que les deux tiers des hommes sont attaqués de la petite vérole une fois dans la vie. Sur trois cents, deux cents doivent l'avoir; il en meurt vingt; s'ils avaient été inoculés, il en aurait peut-être péri un seul, & les dix neuf autres auraient été sauvés. Les anti-inoculistes disent que si c'est un bien pour le général, c'est un mal pour le particulier. Cette maxime ne peut-être plus mal appliquée; car si l'on sauve dix-neuf particuliers, n'est-ce pas un grand bien pour chacun d'eux de jouir de la vie qu'ils auraient perdue sans l'inoculation?103

As we have seen, this was the characteristic approach of the philosophes, who placed their ultimate strength in enlightening public opinion rather than in resting on institutionalized traditional positions.

During the course of the years 1766-1768 both Petit and L'Epine presented supplementary reports to the Paris Faculty with rejoinders that reopened the debate "avec querelles mêmes indécentes." Fully aware that the anti-inoculationist position was rapidly losing ground within the Paris Faculty because, "Ils avaient ressemblé tous les vieillards, les infirmes, les podagres, les docteurs les plus obscurs, en un mot, la lie de leurs confrères,"104 they made vigorous efforts to avert defeat. With every
means at their disposal, they established a precedence in legal procedures, namely, the vote by ballot, with the result that an official decision was never given. But this measure made little difference. Doctors in Paris ignored the réquisitoire and inoculation continued to spread, among the wealthy and privileged, within and outside the towns under its jurisdiction. Indeed, the stern laws laid down by the parlementaires, when they were not followed by equally rigorous police measures to check the illegal practice, did more harm than good for the anti-inoculation cause. The program had partisans in high places: for instance, the Minister of Foreign Affairs, the Duc de Choiseul. It is said, moreover, that the police were unable or unwilling to apprehend those who violated the law, because the Lieutenant-Général of the Police was a partisan of inoculation. In fact, by ignoring the ban on inoculation, the governmental authorities in effect overrode the authority of the Paris Parlement. Inoculation was permitted, and it was acknowledged that this was, to a considerable extent, a personal triumph for La Condamine.

The general acceptance was further confirmed in 1769 when Angelo Gatti was officially instructed, by the Duc de Choiseul, to inoculate all those students at the Ecole Royale Militaire de la Flèche who had not contracted the disease. The anonymous writer noted the triumph of inoculation when the practice of the Gatti method was used in 1769:
Vous avez vu, Monsieur, avec qu'elle ardeur nous nous sommes présentés à l'ennemi, avec qu'elle intrepidity nous avons soutenu ses approches, & avec quel courage nous avons bravé ses coups. Notre exemple pourra servir à bannir les préjugés de la nation qui sont les ennemis de la félicité publique.

The last significant historical event took place within the Court in 1774 when Louis XV was afflicted with smallpox and in fourteen days he was dead. His demise, in turn, led to the inoculations of the royal family which marked the removal of the last royal traditional bastion in Europe which had not sanctioned the medical practice.

Although the controversy over inoculation did not cease completely in 1774, a general investigation of the most recent available literature between the years 1774-1790 provides little new insight into the nature of the struggle and the attitudes of the competing positions within the learned community. During the course of the late eighteenth century, medical men either demonstrated slow, deliberate steps to spread the practice of inoculation, particularly to the suffering masses, or they continued to show a reluctance to accept this medical practice. The medical profession as a whole did, however, operate on the assumption that climatic conditions were a key factor in illness which, in turn, may have explained the sudden onset and devastating nature of severe epidemics like smallpox.

And yet, in order for the practice of popular inoculation to be possible, it was necessary for the price of
inoculation to be radically reduced from what it was during the period under discussion. To do this, it was necessary to introduce differential prices according to the financial circumstances of their patients. This type of price discrimination could have become the most frequent method by which the professional inoculators maximized both numbers inoculated and profit.

Economic considerations were obviously of primary importance in determining the attitudes of local authorities and medical personnel towards the inoculation of the poor. But a strict parsimonious attitude among medical men as a whole served to blunt the realization that it would be cheaper to inoculate the poor than to nurse, feed, isolate and sometimes bury them after they had contracted natural smallpox. Since the price of inoculation was relatively high during this period, most parish authorities in the large and small towns were unwilling to pay for the inoculation of the poor. In fact, there is no evidence of a mass-scale inoculation being paid for by the overseers of the poor or of a large number of the poor being inoculated during a smallpox epidemic. Unfortunately, many contemporaries were not very aware of the potential economic advantages of inoculation during the eighteenth century.

Moreover, amateur inoculators could have played an important role in both reducing the price of inoculation and making it available to the suffering masses who could
not obtain it otherwise. Some amateurs could have practiced as itinerant inoculators by the late eighteenth century. They could have practiced inoculation cheaper than the professionals and have been still concerned with the profitability of the practice.

Although it is beyond the scope of this study, it is possible to learn a great deal about the practice of inoculation at the end of the eighteenth and beginning of the nineteenth century by focusing on the spread of vaccination. In fact, it appears that vaccination was much more popular in France than it was in England during the early nineteenth century, indirectly confirming the conclusion that inoculation was less popular than vaccination by the end of the eighteenth century. Perhaps the general acceptance of vaccination was therefore a logical outgrowth of contemporary belief and practice. Contemporaries familiar with inoculation expected to be protected for a lifetime, and vaccination only protected for relatively short periods, although it significantly mitigated the severity of attacks even in the longer period. This affected not only the attitude of the population in general but also the medical profession itself, most of whom had been initially enthusiastic supporters of vaccination.113

By 1775, however, the controversy had to a considerable extent ceased within the learned community and inoculation against smallpox became a generally accepted, though not universally established, medical practice in France until it was supplanted by the vaccine method of the English doctor, Edward Jenner, in 1798.
NOTES

1 Théodore Tronchin, art. "Inoculation," Encyclopédie, p. 726, pointed out: "Deux des princesses furent alors hardiment inoculées; & de 182 personnes qui le furent dans le courant de cette année il n'en mourut que deux. De 897 qui le furent jusqu'en 1728, il en mourut 17, tandis qu'il parut par les bills mortuaires que dans de temps, la petite vérole naturelle avoit emporté un douzième du total des morts."


4 Ibid., p. 132.

5 This point is made in the interesting study by Cyril B. O'Keefe Contemporary Reactions to the Enlightenment 1728-1762 (Geneva 1974), pp. 48-49. See also the survey by Jacqueline de La Harpe, "Le Journal des Savants et l'Angleterre 1702-1789," University of California Publications in Modern Philology XX (1941), 6, pp. 289-520.

6 De La Harpe, p. 376.

7 O'Keefe, p. 101.


Condorcet, "Eloge de M. de La Condamine," Histoire de l' Académie Royale des Sciences (Paris, 1774), p.110. As Condorcet pointed out in 1774, this day marked the beginning of an important period in the life of La Condamine: "Nous voici arrivés à l'époque la plus glorieuse pour lui; au moment d'une vie toujours si bien employée, où peut-être il a été le plus utile."

"Lettre de M. de La Condamine à M. Daniel Bernoulli," Mercure de France IV (1760), v.I, p.171-72. La Condamine wrote: "De retour de Paris, en 1745 [from a geodesic expedition in South America], je résolus de m'instruire à fond sur cette matière. Je lus tout ce que je pus recueillir d'écrits sur l'inoculation, publiés depuis trente ans, surtout en Angleterre. Je me convainquis de plus en plus, que l'usage de cette pratique rendu générale en France conserverait tous les ans au moins vingt-cinq mille sujets à l'Etat, & réparerait avec usure les petites journaliers, que fait parmi nous la population par tant de causes réunis. J'ai cru devoir à ma patrie de l'instruire de faits, aussi connus chez nos voisins, qu'il ignorés parmi nous. J'en ai tiré le conséquences: j'ai mieux aimé rendre palpables & mettre à la portée de tout le monde, des vérités utiles & trop peu répandus, que d'en chercher des nouvelles, qui pouvoient ne faire plus d'honneur. Trop long-temps détourné par d'autres occupations, je ne pas exécuter ce projet pendant plusieurs années."


Ibid., p.626.

Ibid., p.652. For a similar discussion on Jurin's mathematical calculations, see Tronchin, p.759.

Ibid., p.654.

Ibid., p.669.

en avait parlé dans ses lettres anglaises, sans faire la moindre impression sur l'esprit du public." "Eloge", p.112, Condorcet remarked that La Condamine wrote the memoir for the "gens du monde" and for "les mères tendres et dont le courage avait besoin d'un appui."


23 Hosty, "Rapport de M. Hosty, au sujet de l'inoculation," L'Année Littéraire IV (1755), remarked: "Les succès constans qu'a depuis 30 ans en Angleterre l'inoculation de la petite vérole, & les avantages que la France pourrait retirer en l'introduisant chez elle, m'ont sur-tout déterminé à entreprendre ce voyage."

24 Ibid., pp. 244-45.

25 Ibid., p.249.

26 Ibid., p.256.


28 Ibid., p.265.

29 Ibid., p.266.

30 Ibid., p.275

31 Ibid., pp.274-75.

32 "Rapport des quatres médecins qui ont visité l'enfant inoculé, soupçonné d'avoir eu une seconde petite vérole," Mercure de France I (1759), p.164, Hosty pointed out: "L'homme seul, & tout homme, & une seule fois est attaqué de la vraye petite vérole & de la rougeole. Mais il ne tant pas confondre avec ces deux malades celle qu'on appelle petite vérole volonte, en Anglois Chickenpox."
Another example of this confusion was noted in 1763 by Robert, a medical practitioner, who remarked: "Qu'il est facile de confondre dans les premiers temps une petite vérole discrète avec une rougeole boutonnée." Cited in Recherches sur la nature et innoculation de la petite vérole. Extract in L'Année Littéraire VI (1763), p.207. Finally, this point is also made in the study by J.P. Peter. "Disease and the Sick at the End of the Eighteenth Century", trans. E. Forster in Biology of Man in History, R. Forster and O. Ranum Eds., (Baltimore, 1975), p.108, who wrote: "It was a long time before 'flying smallpox' for a time mistakenly considered to be a highly contagious form of smallpox (variola) found its rightful place as chickenpox."


40 Ibid., p.165.

41 Ibid., pp. 169-70.

43 Ibn, pp.128-29.


45 See the excellent study on this subject by Keith Baker, Condorcet: From Natural Philosophy to Social Mathematics, (Chicago: 1975), pp.129-94, passim.


47 "Lettre de M. de la Condamine à M. le Docteur Maty," L'Année Littéraire VI (1764), p.287. La Condamine noted: "Il est de fait que plus de trente mille personnes en France sont tous les ans victimes de la petite vérole naturelle, & qu'elle en mutile, estropie, ou défigurée un plus grand nombre. Il est clair que cette peste sera réduite à cent personnes au plus en supposant un accident sur trois cens Inoculations; que par conséquent cette opération généralement pratiquée conserverait trente mille sujets à l'Etat, & l'usage de tous membres à trente mille autres, en les préservant tous de difformité. La Nature, la raison, l'humanité doivent décider. La Religion ne peut leur être contraire. La question se réduit à celle-ci: Entre deux dangers, dont l'un est inévitable, Dieu permet-il de choisir le moindre?"


50 D'Alembert, p.476.


52 D'Alembert, p.476.

53 Ibid., p.478.

55 Ibid., p. 211


57 This point is also made by Caroline Hannaway, "The Société Royale de Médecine and Epidemics In The Ancien Régime," Bulletin of the History of Medicine, XLVI (1972), pp. 259-61.

58 For a general discussion on the theories and practices of political economy which reflected the neo-mercantilist, populationist and physiocratic positions; see Ronald Meek, The Economics of Physiocracy (Cambridge, 1963); Idem, Social Science and the Ignoble Savage (Cambridge, 1976); A. Hirschman, The Passions and the Interests (Princeton, 1977); and E. Fox-Genovese, The Origins of Physiocracy (Ithaca, 1976). The work by Fox-Genovese is an important one. She has argued that physiocracy as a doctrine did not exist in the 1760s. In fact, it emerged, slowly and painfully, from the collaboration of Quesnay and Mirabeau and from the confrontation of their radically different notions of the nature and needs of French government and society. For our purposes, the term "political economy" has been used in a broad context in order to discuss its effects on public health in eighteenth-century France.

59 See, for example, Hirschman, pp. 98-102; Fox-Genovese, chaps. 2, 3.

60 This point is derived from the excellent study by Fox-Genovese, passim; see also the sophisticated discussion by Meek, Economics of Physiocracy, p. 18 and passim; and idem, Social Science, pp. 68-99.

61 This position was formulated even more explicitly by Montyon, a populationist, in 1778 in the statistical work, Recherches et considérations sur la population de la France (Paris, 1778) 2 vols. Fully aware of the relations between socioeconomic structure and health, Montyon focused on such themes as high infant mortality among the poor, diseases resulting from the trades by which people were compelled to support themselves and their families, and ill health produced by malnutrition and environmental conditions. For similar discussion see Peter, pp. 81-124; and Hannaway, pp. 257-73, particularly, pp. 259-61.


D'Alembert, p.489.

See, for example, "Origine, progrès, état de l'Hôpital de la petite vérole naturelle et inoculée, depuis qu'il a été fondé à Londres le 26 Septembre 1746, jusqu'en 24 mars 1763," L'Année Littéraire V (1763), pp.212-16.


Ibid., p.266.


See for example, the interesting study by P. Loupes, "L'Assistance paroissiale aux pauvres malades dans le diocèse de Bordeaux au dix-huitième siècle," Annales du Midi 84 (1972), pp.37-61; see also Heller, pp.362-65.

A.D. Cher, c 146 document 139, observation by Allée, the priest of Murlin. Cited in Goubert, "The Extent of Medical Practice," p.416.

Heller, p.364.

On this topic, see Peter, pp.81-124; Hannaway, pp.257-73; Meyer, "L'enquête de l'Académie de médecine sur les épidémi es 1774-1794," Etudes rurales no.34, 1969, pp.7-69; Goubert, Malades et Médecins, pp.178-181; and Lebrun, pp.294-299.

This interpretation has been revised in the recent study by Goubert, "The Extent of Medical Practice," p.413. Goubert has stated: "It remains that the "medical desert" of the countryside is not in fact a void. This belief arises from the "enlightened" judgement of a minority of the medical community, who perceive a desert wherever the most learned medicine is absent. It also stems and one must keep this in mind, from the institutional organization of medicine and surgery on the eve of the revolution, an organization which condemns the countryside to the ranks of the least educated, the least scholarly elements of the medical community, which is not necessarily the most inept!" On this same topic, see Gelfand, pp.62-97; and Goubert, "L'Art de guérir. Médecine savante et médecine populaire dans la France de 1790," Annales E.S.C. XXXII (1977), pp.908-26.


Ibid., p.144.

Ibid., pp.144-45.

Ibid., p.145.

Ibid., pp.146-47.

La Condamine wrote: "Non-seulement il est probable, mais il est démontré par les lois de la probabilité, que sur un certain nombre d'inoculés, sur-tout dans un temps d'épidémie, quelques-uns doivent avoir déjà contracté l'infection du virus par la contagion naturelle avant de subir l'opération," On the other hand, he noted: "On avoit répandu le bruit que cette pratique entretenoït l'épidémie."


"Lettre de M. de la Condamine," VII, p.263.


Ibid., p.285.


La Condamine expressed his disappointment about the decision and wrote: "J'avoue que je ne conçois pas bien, qu'on puisse tout à la fois soutenir qu'une pratique est utile, salutaire, avantageuse au bien de l'Etat, & conclure seulement à la tolérance de celle pratique. Si l'Inoculation est un mal, elle ne doit pas être même tolérée; si c'est un bien, ce n'est pas assez de la
permettre; elle doit être autorisée, encouragée protégée. J'en appelle à la conscience de ceux qui se sont bornés à conclure à la tolérance, par la crainte, mal fondée à mon avis, de ne pouvoir obtenir rien de plus."


96Ibid., p.110.

97Ibid., p.111.


100Ibid., p.113.

101Antoine Petit, Premier & Second Rapport en faveur de l'inoculation. Extract in L'Année Littéraire V (1766), pp.169-98. Petit, pp.171-72, pointed out: "Le but dans cet écrit a été de se faire entendre de tout le monde; sur les matières de science, on s'en rapporte volontiers au jugement des Scavans on les croit sur parole". In this case the nature of the problem was fundamentally different and to formulate a judgement; "Il faut donc se borner à instuire, à persuader, il faut écrire avec clarté," to diffuse information to the French public in general.

102Ibid., pp.179-80.

103Ibid., p.185.

104Bachaumont, v.III, p.68.

"mais comme on inocule dans le Banlieue de la Capitale, & peut-être dans la Capitale même, quoiqu'en secret, & qu'il peut arriver que le jugement de la Faculté l'autorise."

106"Lettre de M. de la Condamine, VII, p.267.

107"Eloge," p.114. Condorcet summed up his contribution to the controversy over inoculation as follows: "Si par l'effet d'un usage général de l'inoculation le fléau terrible de la petite vérole disparaït un jour de la terre...le nom de M. de la Condamine sera prononcé avec attendrissement par quiconque attachera quelque prix à la vie ou sentira celui de la beauté."

108"Extrait d'une lettre du 25 Avril 1769."


110"Rapport des inoculations faites dans la Famille Royale au château de Marly, lu à l'Académie Royale des Sciences le 20 juillet 1774, par M. Lassone,"
Mercure de France VII, (1774), p.127, wrote: L'heureuse inoculation du Roi, de Monsieur, de Monseigneur, le Comte d'Artois & de Madame la Comtesse d'Artois, est une époque trop mémorable dans l'histoire des faits relatifs aux sciences utiles."

111According to the recent literature, the medical corps during the late eighteenth century only came to the rural masses victimized by disease such as smallpox when there was a severe epidemic; the rest of the time they were not under the provincial doctor or surgeon's care. For a discussion on this topic see F. Lebrun, pp.287-88; Goubert, Malades et Médecins, pp.323-28; Peter, pp.113-115; Hannaway, pp.260-62; and Barblan, p.202.

112"Epidemic constitutions" was the medical theory formulated by the English doctor, Thomas Sydenham, which implied that variations in outbreak of smallpox or any other epidemic were dependent on the climatic conditions or changes in the atmosphere. For a discussion on this topic see Peter, pp.100-107; Foucault, pp.178-96; Le Roy Ladurie & Desaive, "Etude par ordinateur des données météorologiques constituées par les correspondants de la Société Royale de Médecine (1766-1792)," in Desaive et al., pp.21-61; and Hannaway. pp.263-73.

113On this topic see, for example, Barblan, passim.
CONCLUSION

This study has attempted to revise the conventional medical interpretation of the history of smallpox inoculation in early and mid-eighteenth century France. It has examined and analyzed the nature of the controversy and the reactions of the learned community and medical profession in French society to the medical, social and religious aspects of the problem. The approach has stressed those aspects of the social history of medical ideas and practices and of the social history of contemporary thought which seems to make sense of the important discussions over inoculation.

In the early period, the relative lag of inoculation in France as compared to England was reflected in the responses of contemporaries toward the widespread belief that inoculation spread the natural form of smallpox to vulnerable members of the population. This, in turn, increased the fears of the vulnerable population which provoked great hostility, particularly within the medical profession, toward the practice. Although "enlightened" medical men campaigned on behalf of inoculation, it appears that this fear was a major reason for rejecting inoculation as an innovative technique designed to save
lives. It also seems that the conventional medical wisdom paid little attention to the fact that poor health and hygiene probably increased the mortality of smallpox during the period under discussion.

By the mid-eighteenth century, however, it was becoming increasingly clear to many learned men that dramatic structural changes were needed in social organization in order to deal effectively with community problems related to public health and hygiene. This position was held together and reinforced by contemporary views on medical advancement. Since innovation in technique and medical knowledge were required as indispensable for the improvements in living conditions, smallpox inoculation was considered to be capable, through increased knowledge and improved techniques, of contributing greatly to French society and the state. In this respect, the support for inoculation was closely associated with the relationship between political economy and public health which stressed on the one hand, the needs of the state as an active force mobilizing human and social resources as a means of wealth and power. Characteristic of the period, on the other hand, was a growing concern by "enlightened" governmental authorities and medical men to control the disease, in order to insure a healthy population, by isolation and quarantine measures rather than by deliberate exposure of smallpox to unprotected people in the community.
It was also recognized that the implementation of new medical practices could be made most effective through an informed public opinion. In this connection, the attempt in demonstrate mathematically probabilistic formulations to social and medical affairs was indeed very ambitious and of historical significance. Since the universality of smallpox in the eighteenth century operated on the assumption that the disease was contracted by almost everyone, the probabilistic formulations of death from smallpox and the comparative mortality rates of inoculated and natural smallpox cases were fundamental to the conception of decision-making as the collective search for the social efficacy of the medical practice.

Despite the efforts of the "enlightened" segments of the medical profession and learned community to familiarize the population with the benefits of inoculation, and the highly successful innovation of technique, the practice of popular inoculation did not occur at any point in the eighteenth century. The limited extent of the practice was related to two features. Firstly, the fear that partial inoculations of only some members of the community would spread the natural form of the disease to the rest; and secondly, the relatively high price of inoculation and the reluctance of medical personnel to spread inoculation to the suffering masses.

The controversy over inoculation was typical of the many conflicts between traditionalism and the secularly-oriented ideas of the Enlightenment. In this respect, it
was the issue of whether or not the practice of inoculation was an effective prophylaxis against smallpox or morally wrong which represented one of the conflicts between the philosophes and the Church. The Church made a case for the relation between soul and God, the belief that it was a sin to deliberately and needlessly cause illness, and the fact that illness itself was part of providence seen in the contemporary eye as a punishment for sins committed to insure the spiritual salvation of the individual. On the other hand, the "enlightened" view held that the "public good" was the desired goal of the social endeavor, that in order to achieve this it was necessary to think in terms of the social order, make general laws, begin public health and hygienic measures and institute general practices for the good of French society as a whole, though they might offend the prejudices of certain individuals or groups.

If medicine offered the means to transform the social world, it also suggested the model of the social organization to be implemented. The controversy over inoculation against smallpox throughout the eighteenth century can be seen as a two-fold program: firstly, it represented the learned community's campaign against an infectious disease; and secondly, the practice of inoculation represented one of the first attempts in France to spread the habit of health and hygiene which, in turn, slowly deflated the power of custom and tradition in the realm of human experience.
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