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The Great Pestilence: Yellow Fever in Portsmouth, Virginia, 1855

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THE GREAT PESTILENCE
YELLOW FEVER IN PORTSMOUTH, VIRGINIA
1855

by
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A Dissertation Submitted to the Faculty of
Old Dominion University in Partial Fulfillment of the
Requirement for the Degree of

DOCTOR OF PHILOSOPHY
URBAN SERVICES
OLD DOMINION UNIVERSITY
May, 2005

Approved by:

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ABSTRACT

THE GREAT PESTILENCE
YELLOW FEVER IN PORTSMOUTH, VIRGINIA 1855

Burden Susan Lundgren
Old Dominion University. 2005
Director: Dr. Clare A. Houseman

In 1855, the town of Portsmouth, Virginia was devastated by an epidemic of yellow fever. Most citizens fled. Of those who remained, most became infected and a thousand died. The municipal government collapsed. In their place, a small organization known as the Portsmouth Relief Association assumed responsibility for ensuring the survival of the town. This organization managed the care of the sick, the burial of the dead, and the care of orphans. It was the sole agent receiving and allocating the funds and resources that poured into the community. Scarce food, drugs and other supplies were available only through the Association. Once the epidemic was over, the Association handed control back to the returning Common Council.

This dissertation examines the work of the Association using systems theory as described by Carter and Anderson. This theory describes individuals as being the center of ever-larger human populations (e.g., families, groups, organizations). Each population interacts with the individual, with each other and with the external environment. The context and the events of the epidemic are described. The analysis concentrates on the organizational element of the theory and uses additional sources concerning the nature of organizations to augment the theory.

Advisory Committee: Dr. Clare A. Houseman (chair)
Dr. Joyce Hoffman
Dr. George Maihafer

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This dissertation is dedicated to those who stayed and those who came to tend the sick, bury the dead, and care for the orphans.

Some months after the above dedication was written, a catastrophe struck my hometown of New York City—this time from the skies. This dissertation is also dedicated to those who stayed and those who came to rescue the trapped, tend the wounded, bury the dead, and care for the orphans.
ACKNOWLEDGMENTS

There are a number of people who have contributed to the successful completion of this dissertation. This project was started under the direction of Carolyn Lawes of the History Department at Old Dominion University. It was continued under the very patient guidance of my committee members. My committee chair and program director, Clare Houseman, has been untiring in her hands-on direction of this project.

Certainly note should be taken of the local librarians and archivists, especially Bartemous Baker of the Portsmouth Public Library and Robert Hitchings of the Norfolk Public Library, who went beyond directing me to source material by sharing their rich personal knowledge of the area and Jay Gaidmore of the Perry Library at Old Dominion University who passed on to me a paper he had written on the epidemic in Norfolk.

To all of these, I extend my sincere thanks.
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INTRODUCTION

It was a small epidemic. A thousand people in Portsmouth, Virginia died of yellow fever. It was just a blip of mortality compared to the 100,000-150,000 yellow fever deaths that occurred in the United States from the 17th to the 20th centuries (Patterson Yellow Fever Epidemics and Mortality in the United States, 1693-1905 cited by Trask, 1996)—small even compared to the 2000 souls who perished across the water in Norfolk. Over four months in 1855, yellow fever desolated the two port cities. Today, as then, the cities face each other across the Elizabeth River at the tip of southeastern Virginia. Located hard by the largest natural harbor in the world, the businesses of both largely revolve around shipping and the military. There are few reminders of the catastrophe that the municipalities shared less than 150 years ago. A “Quarantine Road” runs through the campus of Old Dominion University in Norfolk. Two miles away, a still-empty field is said to contain the bodies of yellow fever victims. In Portsmouth, the orphanage built to house orphans from the epidemic today enjoys a life as a private residence (B. Baker, personal communication, March 20, 1999). Today, visitors to both cities can stroll in gentrified waterfront downtowns and enjoy a pleasant ferry ride between strolls. In these circumstances, it is difficult to imagine the waste that the Aedes aegypti mosquito brought to the very same areas not that long ago.

Yellow fever is a viral disease with an insect vector. It is transmitted by female mosquitoes (most often the Aedes aegypti). After a bite from an infected mosquito, there is a short incubation period (3-6 days) followed by the onset of flu-like symptoms and fever. The disease runs its course in about a week. The characteristic yellow color of the patient is caused by hepatic involvement. Death results from liver, kidney or heart failure. If the mosquito bites a yellow fever victim in the first 3 or 4 days of the disease, the virus passes from blood into the insect’s stomach. For the next 12 days, the virus migrates to the salivary glands from which they are introduced into the next victim. Once infected, the

---

1 This was not the first visit of the disease to either city, but it was by far the most severe. Yellow fever made an appearance in Virginia no less than 13 times during the 19th century. Nine of these outbreaks which ranged from mild to serious occurred in Norfolk. There was a brief eruption of the disease in Portsmouth in 1852 resulting in four deaths.
mosquito can inject the disease into a new victim every 3 days. This continues as long as the insect lives, often until the next frost (Powell, 1949, vii-viii). Mosquito control offers the best means of preventing or reducing spread of the disease. Since the possibility of disease transmission by mosquitoes was entirely unknown until 1878, (Christophers, 1960) in 1855, the citizens of the two cities were at the mercy of the tiny insect that conveyed the virus.

The purpose of this dissertation is to examine the experience of the yellow fever epidemic in Portsmouth with special attention to the process by which the systems constituting the social fabric of the town disintegrated (e.g., the government ceased functioning), re-formed into new systems to meet the emergency, then changed again as the epidemic dissipated.2 In recent past years, we have witnessed a number of world cities dealing with catastrophic situations. In some (the destruction of the World Trade Center, the SARS epidemic in Toronto), governments played dominant roles. However, when AIDS struck New York and San Francisco, volunteer groups sprang up to provide leadership where government had failed. In fact, epidemics in the early centuries of American development were often addressed by a mix of municipal and voluntary agencies. This work presents a case study of how one town survived disaster by harnessing private resources when government failed. Its central focus is the formation and transformation of a community group (the Portsmouth Relief Association), which served as the de facto government until the epidemic burned itself out.

Rosenberg (1992, p. 279) has remarked that epidemics can serve as natural experiments illuminating fundamental patterns of social value and institutional practice. Epidemics, in fact, focus social values and practices in a microcosm driven by a singular desire to survive. In some ways, epidemics serve as blast furnaces that burn away the dross of custom and reveal what is most fundamental to a particular society. Many 19th

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2 The word “epidemic” can be problematic. According to Hays (2000, p. 5), the term refers to a phenomenon that is “temporary, affecting a particular place, and resulting in mortality and/or morbidity in excess of normal expectancy.” Epidemic episodes are superimposed over endemic diseases (those that are normally prevalent in a community). Hays’ commonsense definition aptly describes the Portsmouth (and Norfolk) experience with yellow fever.
century historical issues were played out in the Portsmouth experience. The themes of the 
urban character of yellow fever, of fear and flight, of a disproportionate burden of illness 
among the poor, of caritas versus municipal responsibility, of nativism, of race, of 
southern distinctiveness, of sanitarism, of religious enthusiasm were all part of the 
intellectual tapestry of the pestilence. Of special note was the differing treatment accorded 
to people along perceived class lines. It should be remarked at the outset that one of the 
factors that most complicates this study of disease and society in the antebellum American 
South is the presence of three groups which were regarded differently, counted differently, 
and met the epidemic with different resources and expectations. These are the free and 
enslaved African-American and the white populations. This dissertation attempts, insofar 
as possible, to describe the experience of the epidemic for all of these groups.

An epidemic is often regarded as some sort of aberration of nature’s plan or, 
alternatively, as a punishment from God. Rosenberg (1992, pp. 110-11) has argued that 
medical historians have framed epidemics in varying manners. In conventional 
descriptions, epidemics seem to come from without. They are imaged as attacking aliens. 
More recently, historians have tended to concentrate on the social causes of 
epidemics—epidemics as consequences of societal changes and inequities. However, both 
these explanations miss the broader context of the fundamental ecological disarrangements 
occasioned by human depredations of the environment that result in such devastating 
states of pathogen/vector/human maladaptation. This is not to suggest that proximate 
causes—shipboard mosquitoes, urban overcrowding—are unimportant, but that a less 
anthropomorphic view allows us to appreciate a more complex representation of epidemic 
diseases. Thus, although it is true to state that the yellow fever virus causes yellow fever, 
it may be just as true to state that human yellow fever infections are caused by human 
depredations of the environment and human insistence on becoming traders and city-
dwellers.

Theoretical Framework

Cities exist as both parts of larger systems and as collections of systems within
themselves. This dissertation aims to examine a catastrophic urban event from a systems perspective, but first it is necessary to examine what constitutes such a perspective and how systems theory might illuminate the events described. Ralph E. Anderson and Irl Carter have written extensively describing general systems theory. Unless otherwise indicated, the concepts of systems theory discussed in this paper have been drawn from their work (with Gary R. Lowe) Human Behavior in the Social Environment (fifth edition, 1999).

Social systems theory offers several advantages for the examination of a range of human events. First, it is comprehensive. It offers an opportunity to describe and integrate a number of disparate theories into a larger framework. Second, although it may not explain all human behavior, it does provide suggestions for explanation for many behaviors. Third, it provides a way to organize a number of confusing theories and methods into an understandable whole. Here, of course, is found one of the weaknesses of the theory (indeed, of any theory). The attempt to reduce complex events in terms of systems theory (or, again, of any theory) is doomed to hinder rather than aid comprehension if applied too rigidly (Anderson and Carter, 1999, xix-xx). This paper attempts to balance the structure of systems theory against the complexity of the events described. The application of the theory to events in the past presents a distinct challenge, namely the elucidation of the cultural setting. In this study, this process includes an explication of relevant elements within the society (e.g., current theories of disease) as well as a review of the historical background of the town. Within the constraints of the theory, we examine the utility of its description of the nature of organizations as an explanatory model for this event. In more formal terms, our basic research question asks whether the organizational element of systems theory as delineated by Anderson and Carter can increase our understanding of the Portsmouth yellow fever epidemic. In this section, we describe some of the elements of systems theory.

Elements of Systems Theory

The basis of systems theory is the notion of parts and the whole and the
interrelatedness of both. This is an idea of considerable antiquity. Chuang Tzu, the poet-philosopher of Taoism states it thus:

[H]e who wants to have right without wrong,
Order without disorder,
Does not understand the principles
of heaven and earth
He does not know how
They hang together (Anderson and Carter, p. 3).

Various systems theorists have placed their emphasis on different levels of organizational development from the individual to the society as a whole (p. 4). Anderson and Carter believe that each social entity, no matter how simple or complex, is a holon—an entity that is at once a part and a whole (Anderson and Carter, p. 4).

The “basic stuff” of any system is energy consisting of the exchange of both information and resources internal to and external to the system. Anderson and Carter (p. 9) define energy as “capacity for action” or the “power to effect change.” System energy is derived from many sources including physical capacities of the society’s members, social and cultural resources and the environment. Central to the concept of energy in social systems is the notion of entropy and synergy. These terms derive from the discipline of physics and are applied to society in basically the same way as they are applied to the physical universe. Entropy, then, is the tendency of a society to move toward a disorganized state characterized by a decrease in usable energy. Synergy refers to the increasingly available energy displayed by a system with high interaction among its components(Anderson and Carter, p. 10).

Energy can be secured either from within or from without the system. Organization is necessary to gather energy, to maintain the system and to direct energy toward societal goals. Indeed, to be called a social system, an entity requires a certain degree of organization(Anderson and Carter, pp. 12-14). Systems differ in their degrees
of interrelatedness and complexity. Social systems are highly reactive to their environments. Even very small changes from within or without can make a significant impact on the energy and the organization of a particular system (Anderson and Carter, p.18). Crises (as we shall see) radically change the sources of energy and the degree and kinds of organization associated with a system.

Energy exchange is the basic stuff of a system. Anderson and Carter use the term “steady state” to describe a condition of system energy exchange “in which energies are continually used to maintain the relationship of the parts and keep them from collapsing in decay.” (Anderson and Carter, p. 24) A system is in a steady state when it is maintaining “a viable relationship with its environment and its components, and its functions are being performed in such a fashion as to ensure its continued existence (Anderson and Carter, p. 24). Steady does not mean static. It does mean that a dynamic balance is in play. This balance is not fixed and systems may move from one steady state to another. It is, however, crucial that the system maintain its identity when such movement occurs much as a person retains his/her own personality as growth and maturation occur (Anderson and Carter, pp. 26-7). Indeed, it may be that steady state is not the most desirable condition for a social system. More complex systems may naturally exist in a constant state of transition, even border on the edge of chaos. In their self-transformations, systems may alter, even radically alter, the relationships between their own parts as well as their relationships with the external world.

A system must have some limits to be distinguished from its environment. Energy levels mark system boundaries. A boundary occurs where the intensity of energy interchange is greater on one side than the other(28). Boundaries themselves are also open to energy exchange, but no boundary is completely open since that would render one system indistinguishable from another. Boundaries cannot be completely closed either since a completely closed system would cease to exist (Anderson and Carter, pp. 28, 30).

Parts of systems may be related in various ways. Hierarchical systems are common. There may be differences in the ways energy is distributed or some parts may exert power and control over others. Hierarchal arrangements can also be seen in
institutions that claim moral authority and exert sanctions on or approval of other parts of the system. Chronological hierarchies may also exist. For some events to happen, others must have already occurred.

Continuous, self-initiated feedback cycles—a distinct form of communicative energy exchange—enable a system to achieve and maintain identity and autonomy. Systems do not simply respond to flows of energy and information, but, in fact, select and evaluate information to create and maintain themselves. Changes in the relationships among system components may be brought about by changes in communications. At the same time, changes in relationships themselves occasion changes in communication. (Anderson and Carter, pp. 27, 33, 37)

Complex systems are characterized by differentiation (division of functions) and specialization (having parts that usually or always perform only a specific function). Differentiation and specialization themselves create a greater need for communication and integration to maintain the system (Anderson and Carter, p. 34).

As mentioned above, systems theory is widely applicable. This is also true of the elements of the theory themselves. Moreover, elements can be applied to parts of society as well as society as a whole and can also be utilized to explain the interrelatedness of parts to each other and to the whole. Anderson and Carter examine the theory as it applies to:

• cultures,
• communities,
• organizations,
• groups,
• families, and
• the person.

Systems theory places the person at the heart of the system and assumes personal interactions with an ever-expanding universe of system elements. (Figure 1). It must be noted that the system itself is dynamic. At any time, the elements are interacting with each other as well as with the person, the whole and external systems. As we shall see in the
Portsmouth experience, different system elements may assume enhanced importance to the individual and to the entire system under different conditions.

Figure 1
Cultures

Cultures serve as a background to all social systems. Communities and organizations are macrosystems as compared to entities of lesser size such as groups and families (Anderson and Carter, p. 72). This dissertation focuses on organizations, but these do not exist apart from the culture or, indeed, apart from other system elements. It is necessary, therefore, to review Anderson and Carter's work on all the above entities to establish the context for the examination of communities and organizations.

Anderson and Carter define culture as "those qualities and attributes that seem to be characteristic of all humankind." (p. 44) This definition denotes the separation of humans from the remainder of the animal kingdom. But there is a second, more familiar use for the term "culture." A society is a group of people who have learned to live and work together. Culture is the way of life followed by a society. Thus there may be as many cultures as there are societies.

Four attributes differentiate a culture as human. First, humans have the capacity to think and communicate. Although the forms may change, they are organized into families. Humans use language to communicate and humans, in their social systems, seek and maintain territories. Six attributes differentiate human cultures one from another. These are:

- tool making and usage,
- social organization,
- language,
- management of prolonged childhood,
- urge to explain the world, and
- social relationships (Anderson and Carter, p. 55).

Cultures vary in the way in which they use tools. Tools may be used in a multiplicity of styles to amplify motor or sensory capabilities (e.g., hammers, microscopes) or to enhance reasoning and thinking capabilities (e.g., computers). Their use may be dependent on another attribute of human culture—social organization. All societies have a
degree of organization which may be in constant flux (Anderson and Carter, p. 57).

Cultures, in fact, may evolve as they become more complex. Organizational elements may involve the roles different people or classes play in the society.

Cultures strongly influence the creation and use of language and symbols. Language may be gestural (e.g., a clenched fist) or verbal. Some explain the phenomenon as the transfer of meaning involving interactions between the sender and the receiver, in other words, feedback (Anderson and Carter, p. 60).

Humans have a prolonged childhood. Social arrangements to care for the needs of infants and children vary considerably from place to place and also over time. Changes in social relationships, e.g., the waning of the prevalence of extended families, the rise of public schools, emerging new roles for women, reflect and affect the ways in which children are reared.

As Aristotle famously remarked, “All men by nature desire to know.” Anderson and Carter (p. 63) note that much of the energy of cultural systems is expended in the effort to find meaning and institutionalize it. In western culture, much of this energy has been directed toward scientific explanations of phenomena.

**Communities**

Community exists as a state of mind as well as a social system. Both communities and organizations are classified as macrosystems. Communities are distinguished from organizations in that the former are held together by ties of sentiment while the latter are sustained by rational considerations. Like organizations, communities mediate between society as a whole and smaller, more intimate systems, e.g., the family. For adults, communities or sectors of the community (e.g., educational or legal institutions) serve as primary fields of interaction with the larger world. To individuals, communities shape culture, but at the same time, the actions of individuals also shape the community’s culture (Anderson and Carter, p. 72).

Anderson and Carter define three types of communities. First are place communities. These are defined by the occupation of a common space. A village or a
neighborhood would typify a place community. Nonplace communities have also been called “mind communities.” These include such systems as religious orders or professions. Some sociologists also classify networks (sets of interpersonal connections) as mind communities. The third type of community is that formed by kinship ties. There are blood relationships. These may include Amish communities, barrios or immigrant groups. Of course these categories are not exclusive. Mind communities, for example, may have ties to a certain place (e.g., nurses to a particular hospital) And the types of communities may differ in other ways too. Place communities, e.g., a city may serve a breadth of needs and interests, while a nonplace community is usually focused on a single or narrow range of issues (Anderson and Carter, pp. 73-4, 76).

Keeping these considerations in mind, Anderson and Carter define a community as a population whose members:

• consciously identify with each other,
• may occupy common territory,
• engage in common activities, and
• have some form of organization that provides for differentiation of functions, which allows the community to adapt to its environment, thereby meeting the needs of its components (p. 76).

Communities maintain the cultures of their members and provide for them ways to satisfy their needs, interests and ambitions. Community members consciously identify with the community, i.e., they define themselves at least in part as community members. Communities must also meet the needs of their environments in order to survive for they are parts of a web of interactive systems. Religious communities for example may tailor the services they perform to the changing needs of the population they serve. Communities perform their work by means of energy exchange supplying energy both to its own components (e.g., individuals) and its environment (e.g., cities) (Anderson and Carter, pp. 77-80).
Communities facilitate communication, a form of energy exchange. A continual supply of new members is essential to community maintenance. Indeed, without new members, a state of entropy ensues leading to the death of the community. Successful communities must not only recruit members, they must also socialize them into the community culture (Anderson and Carter, p. 90). Communities may utilize mild e.g., peer pressure) or more pronounced means (e.g., sanctions) to enforce their mores.

Organizations
Anderson and Carter state “Modern societies are organizational societies.” They have largely “replaced communities and families as mediating... institutions in society.”(Anderson and Carter, p. 101) Talcott Parsons (1960, p. 17) states that primacy of orientation to the attainment of a specific goal is the defining characteristic of an organization. Anderson and Carter follow that concept and define an organization as “a social system whose purpose is the achievement of specific, explicit goals” (p. 103). In order to accomplish this, its members must confine themselves to a relatively narrow range of behaviors intended to fulfill this purpose, exercise power over each other in the form of authority and hierarchal control in order to assure compliance with the system’s goals and adherence to the members’ prescribed roles (Anderson and Carter, p. 103). Because they are dedicated to achieving specific goals, organizations have identifiable outputs—outputs which are actually the inputs for other systems (Parsons, p. 17).

The Open Systems Perspective
Anderson and Carter (p. 113) concern themselves with an open systems model. From this perspective, organizations are viewed as a system of interdependent activities. They argue that organizations must, in fact, be more flexible than is allowed in the more traditional models and that the systems model they propose allows for the necessary flexibility. They set forth behavioral, structural and evolutionary aspects of the open systems model.

What are the behavioral aspects of the open systems model? These comprise
communications, goal direction, differentiation, power and control and leadership. Communications are essential to all systems (Anderson and Carter, pp. 114-15). To focus attention on specific goals, organizations must set parameters for communications and control the channels through which information flows. Communications arrangements tend to mirror the nature of the organization, e.g., in a very centralized organization, information flow is mainly top down. Communications may also be more or less precise, technical and limited.

Goals are desired future conditions—a sort of “self-actualization.” (Anderson and Carter, pp. 116-17) Two aspects of goal attainment should be distinguished: effectiveness and efficiency. The former refers to the degree to which the organization achieves its goals. Simply put, the latter refers to how easily that achievement may be accomplished. Goals may change. Sometimes efficiency may be stressed to a greater or lesser extent or goals that are achieved may lead to the establishment of new goals. Goals may also multiply as new needs are identified and they may be displaced as other goals assume greater importance.

What traits specifically characterize organizations? Organizations are the most efficient and effective of all social units. The latter is judged by the extent to which the organization meets its goals, the former by the organization’s expenditure of resources versus results. Measurements of both are easy or difficult depending on the complexity of the organization. (Many organizations have multiple goals.)

The degree of differentiation is a marker for modernity of a system. Differentiation refers to the division of specific functions within a system, e.g., education becomes a function of schools rather than of parents. Even more, certain kinds of education become specialized themselves, e.g., technical subjects versus humanities, of segregation of students by age and/or level of accomplishment. A marked degree of differentiation may be detrimental to the system itself when differentiated segments of the system work toward conflicting goals.

Groups
Social groups are the smaller entities in which people engage on a day-to-day basis. Groups often come together for specific purposes of support or to accomplish a specific task (e.g., committees). Groups tend to be highly dependent on specific persons whereas organizations are generally designed to limit dependence on individuals (Anderson and Carter, p. 146). Groups are systems if they display the characteristics of systems, e.g., defined boundaries, energy exchange. Groups as systems display both evolutionary and structural aspects. As groups are formed, they pass through various stages of dynamic development. Anderson and Carter (pp. 150-51) describe a complex process during which group members gradually put aside their own goals, commit to the goals of the group, enter into conflict and eventually participate in the disintegration of the group (either planned or unplanned).

Groups may be structured in such a way that boundaries mark them out from other entities and give them a degree of autonomy (Anderson and Carter, p. 156). Differentiation of function occurs within a group as roles are acquired by individual members. Groups may also be distinguished as systems by their behavior. They adapt to the energy exchanging environment. They socialize their members, develop methods to control conflict and to communicate (Anderson and Carter, p. 160).

Families

Although they may take different forms, families are a universal social system. Families are distinguishable from other systems by their goals, functions and microcultures. Above all, a family is marked by the high degree of relatedness among its components. It is the smallest of the social systems. Typically, there is a high degree of interdependence among its components (Anderson and Carter, p. 183). The intensity of the interaction among family members sets the family's behavioral boundaries apart from other social systems. Within families, differentiation and specialization are reflected in role allocations (e.g., some may work outside the home, others not). Socialization and social control functions are characteristics of families.
Persons

The person is the fundamental material element of the social system. He/she is the kernel at the heart of social systems theory. As illustrated in Figure 1, the person, throughout the course of a lifetime, interacts with an increasingly extensive set of system elements. In the Portsmouth experience, these elements and their relative importance changed radically.

Discussion

Systems theory offers a sometimes complex paradigm to explain infinitely more complex social phenomena. This paper uses Anderson and Carter's explication of systems theory to interpret the experience of the town of Portsmouth during the yellow fever epidemic of 1855. We are asking whether systems theory as elucidated by Anderson and Carter can help us to understand the epidemic.

This paper depicts Portsmouth as it existed prior to the epidemic, reviews the epidemic, and its management, and discusses the application of Anderson and Carter's explication of systems theory to the Portsmouth experience.

Significance of the Study

This work was begun when the notion of a fast-moving, urban general epidemic seemed unthinkable. Since then, the SARS epidemic and the threat of bioterrorism have linked us in unexpected ways to those populations who have suffered and survived the bane of plague times. What can a 19th century experience teach us about our own times? On a very practical level, the activities of the Portsmouth Relief Association demonstrated the necessity of having a single organization with the authority to make decisions concerning all aspects of civic life and to make them quickly in emergent times. It also suggests that such an organization should be small, flat, and comprised of people experienced in civic affairs. On a macro level, the examination of this epidemic demonstrates how these threats are lived out in contemporary terms. The experience of the town of Portsmouth illuminated the beliefs of the times including (but not limited to)
race, gender and ethnicity.

There is a substantial body of literature concerning 19th century American epidemics. Nearly all of it is written by professional historians. Very little of it is read by public health professionals (or any health professionals). Why is it important for public health professionals to know and understand their history? First, because it is their story. Practicing public health with no knowledge of its history is like being an American never having heard of the Declaration of Independence, the Constitution or George Washington. The standard public health mechanisms of our time (e.g., quarantine, Boards of Health) have their origin in earlier periods.

Second, knowledge of our history causes us to be considerably less naive with respect to the limits of our knowledge. In looking at 19th century epidemics, we see health professionals practicing according to the best theories of their time. The theories were wrong. But we also practice according to the best theories of our time. We could be wrong too...and it is ironic, at the least, that the mechanisms mentioned above were born from wrong-headed theories of disease and contagion.

Third, an epidemic is as much a social as a biological event and social reactions demonstrate a certain constancy. Analysis of public reactions to the epidemic in Portsmouth reveal uncomfortable parallels to experiences in our own times. The lack of concern shown the Irish when they were the only victims of the disease and the abrogation of government actions in time of epidemic are not unlike the experience of AIDS victims in the first decade of that epidemic. The Chinese were not the first to suppress knowledge of a worrisome disease outbreak (SARS, 2003). Review of earlier epidemics, including the one covered in this work, reveals this to be a common phenomenon. Knowing our history should have caused us to anticipate these reactions and to prepare for them.
REVIEW OF THE LITERATURE

Etiology of Epidemics

The experience of epidemics is age-old. According to Karlen (p. 55), accounts of pestilences are found “in the ancient writings of the Sumerians, Babylonians, Hebrews, Hittites, Egyptians, Greeks, Romans, Indians and Chinese.” Pathogens that may trigger epidemics are everywhere. Wills (1996, pp. 30,36) describes the crowds of pathogens in which all life, both plant and animal, exists as an always-present penumbra. But many pathogens coexist with their prey in a balanced way. Wills (p. 46) notes that the organisms that cause epidemics “spend most of their time minding their own business, dining off what they can get, and keeping a commendably low profile”. Indeed, it is to a pathogen’s advantage not to kill over-many of its hosts (McNeill, pp. 56-62, 130-1).

We know a great deal about how epidemics occur, but have paid far less attention to why they occur. Epidemics do not happen to us alone. In concentrating on a purely human perspective, we miss the more universal characteristics which constitute the real frame of the disease event. It is simple to state that yellow fever is a viral disease spread by an insect vector, in this case, the mosquito. But epidemics are not that simple. Even the mosquito and the virus have tales of their own. Nature is complex and its elements are interdependent to an extraordinary degree, and to a considerable extent, humankind has brought about its own plagues by its drive to organize in cities, establish extended trade routes, wage wars in foreign lands, and destroy the habitats of both pathogens and prey.

Prolonged interactions between hosts and infective organisms often result in patterns of mutual adaptation that allow both to survive. A pathogen which quickly kills all its hosts is equally at risk for survival as one that finds itself in an immune population. Thus an epidemic presents real dangers for the survival of the pathogen as well as of the host (McNeill, 1976 p. 9). McNeill (1976, p. 7) notes that every biological system tends to maintain its equilibrium, that “outside” disruptions tend to provoke compensatory changes within the system, but that there are critical limits, which, when transgressed, result in system breakdowns. In yellow fever, critical limits may be surpassed when the
arboreal environment of sylvan yellow fever is destroyed, or, more directly, when a ship carrying infected mosquitoes makes port.

Seen from an evolutionary perspective, plagues may drive the development of diversity necessary for the adaptation and survival of the species involved. Wills (p. 23) argues that there are, in fact, so many species of life on earth because of the presence of disease. Host species protect themselves by becoming very different from each other while pathogens become more specialized by changing to overcome the defenses of the evolving hosts (Wills, p. 23) The latter changes do not necessarily increase virulence. To ensure their survival, Wills (pp. 47-8) asserts that pathogens always revert to milder infectious agents. Indeed, he suggests that pathogens are more fragile than we often think, borrowing bits of DNA from other sources to survive and rapidly dying or evolving when suitable ecological niches, e.g., virgin populations, are eliminated.

Evolution is, of course, the fruit of mutations. Clearly, the greater the absolute numbers of a population, the greater the absolute numbers of mutations. The striking increases in human populations in the recent past centuries have occasioned correlated increases in the organisms for which we are the main meal. This creates opportunities for rapid changes in both virulence and resistance. And humans have introduced a new and dangerous (to us) variable that threatens to rapidly undo our hard-won ecological balance altogether. The widespread use of antibiotics add greatly to pathogens’ opportunities to adapt in a way favorable to them—and disastrous to us (Wills, p. 21). Worrisome also is the “eradication” of certain diseases. Eradication destroys the “disease partnership” (McNeill, 1975, p. 10) built between populations and the organisms that prey on them. If, then, the disease (or one very similar) should re-arise, all populations will be “virgin” to that organism and therefore liable to decimation.

If humans and their parasites evolved on a parallel biological trajectory, changes in both would be slow and mutual adaptation would be the rule. But adaptive mutations evolve over generations, giving rapidly reproducing microorganisms a substantial advantage over humans (Crawford, 2000, p. 36). Even with the slow rate of human reproductive adaptation and human environmental depredation, many diseases which
began as raging epidemics “gentled” with time, often becoming common childhood diseases (Karlen, pp. 56-7). McNeill (1976, pp. 18-22) argues that the speed of the human cultural revolution has largely outpaced the adaptive abilities of pathogens leading to the episodes of extreme maladaptation we label as epidemics, that, in fact, humans cause epidemics by intruding into the lives of pathogens rather than the other way around. “Looked at from the point of view of other organisms, humankind therefore resembles an acute epidemic disease, whose occasional lapses into less virulent forms of behavior have never yet sufficed to permit any really stable, chronic relationship to establish itself.” Karlen (1995, p. 11) provides an eloquent argument for this thesis in modern times.

We provide new ecological niches for microbes by tilling fields and domesticating animals, and by bringing into existence gardens and second-growth forests, villages and cities, homes and factories. We give them new homes in discarded truck tires and water tanks, in air conditioners and hospital equipment. We transport them by automobile, ship, and airplane. We alter their opportunities and affect their evolution when we change our abodes, our sex behavior, our diets, our clothing. The faster we change ourselves and our surroundings, the faster new infections reach us. In the past century we have changed the biosphere as much as any

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3 In the case of yellow fever, this phenomenon is also seen among primates with African monkeys being less susceptible to the disease than their South American cousins. (Disease News Yellow Fever, 2002)

4 This phenomenon can sometimes appear to reverse itself. Smallpox, having become a mild childhood disease in Europe seemed for a time to regain its ferocity even among Euro-Americans in the New World (Hays, 2000, pp. 75-6). The theory of benign adaptation has even been developed to suggest that viruses may act as a symbiote defending against invaders and providing survivors with an advantage over others (Harper, 1998/1999). This optimistic picture, however, is not universally accepted. Ewald (2000) envisions a more competitive scenario—a constant war being waged between our immune systems and the microorganisms that share the planet (as well as by individuals within the same species) with disaster waiting around every corner. He argues that some pathogens will tend toward benignity and some will not. In any case, it is doubtful that we fully understand the relationship of viruses with larger organisms at this time.

20
glacial surge or meteor impact ever has. So we and microbes are dancing faster
than ever in order to survive each other.

The “dance” started long ago. Karlen (p. 20) sets its beginning 5 million years ago
when human ancestors traded one ecological niche for another by leaving the trees for the
ground. But on a more universal scale, the dance had already begun. All creatures, in fact,
stay alive at some expense to others. Living things must create protein by taking in the
proteins or amino acids of other living things. However, since the process depends on
mutual dependence, it is self-limiting. In the end, the relationship can even become
symbiotic (e.g. the coliform bacteria that live in the large intestine) (Karlen, pp. 16-7).
When humanity moved again, this time from tropical to temperate latitudes, it found a
simpler, less threatening biological situation (McNeill, p. 28). However, humankind’s
predilection for movement also allowed the importation of tropical pathogens to foreign
shores, not to mention continual supplies of unexposed populations to serve as hosts.5

Increased crop yields and the development of capitalism brought about vibrant
market economies. Subsequent industrialization and the resultant crowding in cities
increased opportunities for infectious pathogens. (Hays, 2000, p. 109) According to
Karlen (pp. 48-9), for several million years, accidents and wounds were the main causes of
human deaths. The crowding of people into the crowded, circumscribed and filthy
circumstances of city life offered virgin populations to ambient pathogens and the
increased numbers of people meant that, once started, an epidemic could sustain itself.
Cities of only several thousand were enough to support most crowd diseases (Karlen, p.
49). Indeed, Reader (1998, p246-8) argues that throughout most of history the African
population lived in relatively small groups in order to maintain their mutually successful
adaptation with the teeming pathogens in their environment.

The development of cities was dependent on the ability of humans to reliably
produce adequate amounts of food through the domestication of animals and plants

5 Hosts are not limited to humans. At one point, yellow fever imported from Africa almost
wiped out the population of howler monkeys in South America (Karlen, p. 19).
In turn, the establishment of cities demanded even greater food supplies (Karlen, p. 49). The alterations of natural landscapes for agriculture—plowing and irrigation—themselves upset existing parasitic ecosystems (McNeill, p. 41, Karlen, p. 41) and dependence on single crops rather than the varied diet typical of hunters and food gatherers produced nutritional deficits and vulnerability to chronic and epidemic disease (Karlen, pp. 35-6). In the event of crop failure, city-dwellers were not able to move on to other, more fertile areas (Karlen, p. 50-1). The domestication of livestock placed humans in close proximity (often in the same dwelling) to another reservoir of disease (McNeill, pp. 51-8, Karlen, pp. 36-7). And cities, themselves, placed humans in close proximity to one another—close enough that the ongoing die-off in cities was too great to sustain their populations (McNeill, pp. 62-3). Cities, in a very real way, “consumed” excess population from the countryside (McNeill, p. 67).

The nineteenth century has been called “the century of cities” (Callow, 1982 p. 65). During the antebellum period, America exemplified this representation. From 1820 to 1860, the total population of the country increased by 226 percent, but the urban population increased nearly 800 percent. This rapid settlement moved the percentage of urban population from six to 20 percent in the same period (Callow, 1982 p. 65). Most urban growth in America, however, took place in the north. By the end of the decade under study here, one quarter of all northerners lived in a town or city of more than 2,500 inhabitants compared to fewer than 5 percent of southerners. Moreover, with the exception of New Orleans, America’s largest cities (New York reached 1,000,00 during this decade), were either in the north or on the northern borders of the south (Kolchin, p. 176-7).

The degree of southern participation in urbanization, however, has been a matter...

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6 Ecological changes wrought by colonizing Europeans provide a “fast forward” version of disease-engendering development. Irrigation projects in Egypt, for instance, provided a perfect environment for the growth of the bilharzia parasite. Belgian rule in Zaire changed traditional farming practices in a way that increased contact between humans and disease-bearing tsetse flies (Farley’s Bilharzia: A History of Imperial Tropical Medicine; Prins’ But What was the Disease? The Present State of Health and Healing in African Studies, both cited in Hays, 2000 p. 185).
of controversy among historians (Goldfield, 1982). Curry (1974) even notes that some maintain that southern cities were so atypical that they were not truly urban. Goldfield, however, argues that the south was fully invested in urban growth. He maintains that the industrialization that so often served as the base for urban growth was present in the south to an unappreciated degree. Moreover, the supposed southern nostalgia for country life was also present in the north and posed no more impediment to the growth of cities in the south than it did above the Mason-Dixon line. Interest in building cities grew among many southerners as feelings of sectional rivalry increased. It was believed that urban and commercial development would allow the south to become self-sufficient. Moderates believed that building southern cities would, in fact, calm sectionalist passions. In any case, the antebellum south boasted a substantial number of urban apologists (Brownell, 1983, pp. 144-5).

There were also strong economic factors driving the growth of southern urbanization. Southern landowners were prone to place their profits in investments (e.g., bank stock, municipal bonds) that undergirded and promoted the growth of cities (Goldfield, p. 83). The decade between 1850 and 1860 was a period of particularly intense growth with a quadrupling of southern railroad milage and an increase of 64 percent in southern industrial investment (Goldfield, p. 84). Promoters of southern urban growth looked to municipal expansion as a means to slow perceived northern expansion (Goldfield, pp. 86-9). Growth of southern cities was also promoted as a means to increased sectional strength and even as a strategy to change and elevate society (Goldfield, pp. 84-5). Cities formed centers of business, of leadership, of communications. Local governments took on new prominence assuming functions of policing, fire-fighting, street-lighting and poor relief. Their power to tax grew concomitantly (Goldfield, pp. 86-87). However, as fast as southern cities were growing, those of the north outpaced them because of their trade links with the rapidly expanding west (Goldfield). However, northern cities also had a sectional population advantage. Curry (1976) argues that between 1800 and 1850 the population of the south grew by 268.62 percent while the urban population grew by 946.52 percent. Comparative figures
for the remainder of the nation were 403.51 percent and 1011.7 percent. However, total regional population increases obscured the southern urbanization rate.

Rosen (1958/1993 pp. 177-9) argues that the spurt of urban growth occasioned by the industrial revolution exacerbated the dangers that urbanization presented to public health. "...the problem of the public health was inherent in the new industrial civilization. The same process that created the market economy, the factory, and the modern urban environment also brought into being the health problems that made necessary new means of disease prevention and health protection." In the absence of mechanized transportation, increased urban growth meant increased housing density especially for the poor. It also meant that rich and poor lived in close proximity, making the many diseases that started in the most crowded areas of poverty a direct threat to the more affluent (Palen and Johnson, 1983).

**The Mosquito**

To understand yellow fever, it is first necessary to understand the mosquito. To us in 21st century America, the mosquito is an annoyance. Until the discovery that the West Nile virus had successfully established a foothold on this continent, most of us gave little thought to the consequences of a mosquito bite other than looking for something to relieve the itch. We had drastically underestimated the momentous consequences of the presence of this tiny creature. Andrew Spielman (2001), having spent a working lifetime studying the mosquito, put it thusly:

No animal on earth has touched so directly and profoundly the lives of so many human beings. For all of history and all over the globe she has been a nuisance, a pain, and an angel of death. Mosquitoes have felled great leaders, decimated armies, and decided the fate of nations. All this, and she is roughly the size and weight of a grape seed (Spielman and D’Antunio, p. xv).

Most people realize that mosquitoes breed in standing water. However, for a
mosquito, not all standing water is created equal. The most common mosquito on earth, the *Culex pipens*, prefers filthy standing water. (Spielman and D’Antunio, 2001, p. 19). Others prefer the edges of streams or lakes and hide from predators in what is known as the “intersection line”, the interface between liquid, solid and air (Spielman and D’Antunio, p. 19). The *Aedes aegypti* mosquito, the most common vector of yellow fever, prefers to lay eggs in the water found in sheltered cavities such as tree holes or coconut husks or in manmade containers such as discarded food containers or tires (Spielman and D’Antunio, p. 32).  

Mosquitoes are an ancient animal. They are descended from insects that are thought to have emerged during the Jurassic Period and may have fed on dinosaurs (Spielman and D’Antunio, pp. 36-37). They are ubiquitous, surviving even in the Arctic (Spielman and D’Antunio, p. 36) and show a remarkable ability to adapt to changing conditions (Spielman and D’Antunio, p. 41). This ability to adapt has been well demonstrated in the species relationship to humans. For many thousands of years before humans evolved, the various species of mosquitoes held to their own territories (Spielman and D’Antunio, p. 44). In fact, in the presence of only small bands of humans, mosquitoes preferentially fed on other animals and their role as vectors of disease was largely limited to primates in the forest canopy (Spielman and D’Antunio, 44), although loggers and others who brought the canopy down on themselves also brought down the mosquitoes and their diseases (Karlen, 20). But human populations also put pressure on nearby mosquitoes to adapt to the environmental changes they wrought. As they changed the landscape, often destroying some wetlands and creating others, the niches for varieties of mosquitoes changed also. As noted above, some mosquitoes learned to prefer breeding in artifacts of civilization (Spielman and D’Antunio, 44-45). In the process, they also learned to enjoy feeding on human blood. Taubes (1997, p. 40) provides a vivid  

7 In the forest canopy, mosquitoes of the genus *Haemogogus* (in South America) and *Aedes simpsoni* (in Africa) carry the disease among primates. Once the organism had been introduced into human settlements, the ubiquitous *Aedes aegypti*, which prefers to breed in the offcasts of human civilization (discarded bowls, tin cans), became the preferred vector (Bray, 1996, p. 108).
description of the process.

It begins with a bite. She alights on your skin, a small, elegant, grayish mosquito with a distinctive, silvery-white lyre-shaped pattern on her back. She has small wings and fernlike antennae. Her Latin name is *Aedes aegypti*. As with all mosquitoes, only the female bites you. Nothing personal: she simply requires protein to produce her eggs and has evolved the equipment to procure it from your blood. Males live exclusively on nectar.

Upon landing, she probes for a blood vessel, inserting her mouthparts into your skin a millimeter or two at a time, lubricating the motion with saliva, then pulling back out. The motion is oddly reminiscent of fly-fishing, of dipping the rod in a cast and bringing it back. When she finds a blood vessel, she forces the tip of her proboscis through the skin and into the flow of the blood. She then simultaneously sucks out blood while continuing to dribble saliva. The walls of her proboscis are double-barreled, so saliva dribbles down one barrel while the blood is imbibed through the other. If she happens to be infected with a virus or a parasite, it will pass by way of the saliva to you.

When humans lived in isolated communities, their infectious diseases, whether mosquito-borne or not, stayed within their settlements. That changed as people began to travel over long distances. As exploration and population shifts became widespread, pathogenic organisms began to play a sometimes deciding role in historical events. Pathogens could play offensive or defensive roles. Measles or smallpox, for example, have devastating, even genocidal consequences when introduced into virgin populations and can serve, therefore, as weapon for immune invaders—a phenomenon the historian Alfred Crosby has designated as ecological imperialism (Karlen, 96). Smallpox introduced by the European explorers and colonizers particularly devastated native American populations (Hays, 2000 p. 73). Other diseases, e.g., endemic malaria, tend to
keep newcomers out of certain areas. The native peoples of the Americas were most unfortunate to possess few defensive pathogens and yet more unfortunate to have lacked previous exposure to the virulent disorders introduced by incoming Europeans (Spielman and D’Antunio, pp.51-53). However that imbalance would soon be redressed by the people the same Europeans captured and enslaved. These souls sprang from a source that was unusually well endowed with defensive organisms. The ships that brought slaves to the New World also brought African mosquitoes and, with them, malaria and yellow fever (Spielman and D’Antunio, p. 53).*

Yellow fever first broke out in the New World in 1648 in Yucatán and Cuba. McNeill (p.213) speculates that the delay in its introduction was due to the time it took for the \textit{Aedes Aegypti} mosquito to establish a niche in an American climate (temperatures always above 72 degrees Fahrenheit) that would allow it to propagate (McNeill p. 213). It also established a sylvan reservoir in the new world monkey population (Karlen p. 106). From this new home, it struck the American colonies and then the United States from Boston to New Orleans 90 times between 1683 and 1880 and virtually every year thereafter until 1879 (Tobey, 1930 p. 164; Rothstein, 1985 p. 59). It was even seen in Canada (Bray p. 110). The last American epidemic (in New Orleans) occurred in 1905.\textsuperscript{9,10}

Still, there are an estimated 200,000 cases of yellow fever in the world each year with an estimated 30,000 deaths (Yellow Fever 2001.\url{www.who.int/inf-fs/en/fact100html}).

The \textit{Aedes aegypti} mosquito with its limited lifespan and its equally limited flight

\begin{itemize}
  \item \textsuperscript{8} Some theorists have speculated that yellow fever was known to the Mayans before the arrival of Cortez, but the evidence is thin (Bray, p. 109).
  \item \textsuperscript{9} The disease also traveled to Europe and Great Britain. In England, infected patients were dressed in yellow jackets. The yellow flag that was flown over quarantined areas was referred to as the “yellow jack” (Oldstone, p. 46). Yellow jack became the maritime name for the disease and the yellow flag was also flown on infected ships (Trask, 1996).
  \item \textsuperscript{10} The \textit{Aedes aegypti} can pass on infection in its eggs, but the virus apparently had to be imported to North America from the Carribean each year to spark an epidemic Downs. History of Epidemiological Epidemics of Yellow Fever cited in Trask, 1996).
\end{itemize}
range (less than 300 meters) (Oldstone, p. 46) might have remained a homebody, save for its breeding site preferences which are particularly well suited for ocean travel. Partially filled shipboard drinking casks served as ideal incubators for eggs laid by infected mosquitoes. Crews and cargo (if a slave ship), all in enclosed spaces, served as a constant blood supply. Two or three breeding cycles (ranging from four to ten days), each bringing forth a new yield of infected mosquitoes, could be completed on a trans-Atlantic voyage (Spielman and D’Antunio, p. 56-7; Womack, 1993).

Once on land, the 19th century *Aedes aegypti* found a plethora of breeding-friendly sites in American cities. Trask (1997) lists “cisterns, fountains, horse troughs, rain barrels, food tins, and roof gutters” as being favorites of the insect. With such hospitable conditions, it was no wonder that visitors to southern cities often commented on the hearty appetites of the many mosquitoes there (Trask). Southern latitudes also provided the *Aedes aegypti* larvae, which typically die at temperatures below 10 degrees Celsius, with a friendly environment (Womack, 1993). The *Aedes aegypti* is a “skittish” mosquito, one that is easily startled while feeding and so flies to the next victim giving it a high vectorial capacity. It prefers to live indoors, often in darkly lighted closets, cabinets or cupboards, and is therefore protected from weather conditions that might otherwise kill it (Taubes, 1997; Womack, 1993). Its indoor habitat of course also allows it ready access to the sick and, in any case, ensures close proximity to human populations (Carrigan, 1994, p. 5). Given suitable conditions, biting females can easily live up to a month (Womack).

Coming from an endemic area, many Africans had adapted to the disease and were largely protected from its most severe effects. People of European origin were not so blessed. From the mid-seventeenth century, the New World was struck again and again by yellow fever epidemics. Quarantines, when implemented, were proved useless (Spielman and D’Antunio, p. 56-7). Survivors were immune, but the nature of American colonization was such that soldiers and settlers arrived from Europe and Great Britain in a never-ending stream with each of them, oddly enough, serving as targets of a defensive pathogen from a continent they had never visited. Yellow fever decimated European
armies and recurred periodically in many American cities, always finding victims in those
who had arrived in the city since the last epidemic.\textsuperscript{11} Although the disease eventually
disappeared from the cooler areas of North America, the Caribbean and areas of the deep
south which seldom experienced killing frosts suffered continued epidemics and served as
reservoirs of infection for other areas. In 1793, 10 percent of Philadelphia’s inhabitants
died of it—5500 people. New Orleans suffered from the disease again and again. Two
years before the Portsmouth/Norfolk epidemic, it claimed 200 lives per day during its
course. More than 5000 died in Memphis in the late 19\textsuperscript{th} century.\cite{spie, dan}

As has been mentioned previously, yellow fever is transmitted by the bite of female
mosquitoes (most often the \textit{Aedes aegypti}). If the mosquito bites a yellow fever victim in
the first 3 or 4 days of the disease, the virus passes from blood into the insect’s stomach.
For the next 12 days, the virus migrates to the salivary glands from which they are
introduced into the next victim. Once infected, the mosquito can inject the disease into a
new victim every 3 days. This continues as long as the insect lives \cite{pow, vii-viii}. But every bite does not result in an epidemic. In certain tropical areas, yellow fever
exists in arboreal monkeys in the canopy. The disease presents considerable danger to
certain species (howler and spider monkeys) with infections of lesser import in others
\cite{dise, yf}. The existence of this epizootic reservoir
presents danger to humans who disturb the canopy, usually by logging. These sylvan
cases are usually limited to the persons originally bitten by the disturbed and infected
mosquitoes \cite{kar, 20}. There are also, then, “zone of emergence” cases usually seen
in the African savannahs. These outbreaks occur where there are areas of increased
contact between humans and infected mosquitoes \cite{yf}. Usually these are “dead end” interactions, i.e., not
transmitted further \cite{fl, 731}. These

\textsuperscript{11} One European army decimated by yellow fever was that of Napoleon’s expeditionary
force to San Domingo, sent to conquer that island and move into the Mississippi River valley.
Two thirds of the force perished from yellow fever within two months and the French
conquerors’s plans for an American invasion were destroyed \cite{tob, 1930}.  

29
outbreaks can shift to the urban epidemic pattern when the virus is introduced into areas of high unvaccinated population density (Yellow Fever Facts, 2002 www.sho.int/inf- 

fs/en/fact100html). As Carrigan (1994, p. 5) puts it

A delicate balance of conditions is necessary for the development of an epidemic within an area where yellow fever is not an endemic disease. First the Aedes aegypti must be concentrated in substantial numbers, and the weather must be warm enough to allow for mosquito activity. Further, a considerable number of non-immune persons must be concentrated in an area where the mosquitoes are active, and the virus must be introduced into that area by a previously infected mosquito or by a person in the incubation period or the earliest stage of the disease.

The Virus

The name “virus” derives from the Latin term for poison (Flint, Enquist, Krug, Racaniello and Skalka, 2000). A virus has been defined as “a piece of nucleic acid surrounded by bad news” (P.B. Medawar, Aristotle to Zoos cited in Oldstone, 1998, p. 8). Less poetically, the virion (the virus particle) is a nucleic acid genome in a protein coat (capsid). The mission, so to speak, of the virus is to insinuate itself into a cell where it can replicate (Harper, 1998/1999 p.1). The proteins are responsible for the infection of cells and the production of new viruses while the nucleic acid provides the genetic code required to produce the proteins (Harper, p. 2). Viruses are complex and difficult to classify, but major systems of classification depend on whether the virus contains DNA or RNA, presence or absence of an envelope membrane, size and shape, and major proteins. The virus that causes yellow fever contains RNA, is enveloped, icosahedral (a solid figure with 20 plane surfaces in the shape of identical equilateral triangles) in shape, measures 40-60 nm and contains 3-4 major proteins (Harper, pp. 2-4). It is classified as a flavivirus of the Togaviridae family (Yellow Fever Facts, 02). A virus is arguably alive or not alive. Harper (1998/1999, p.1) states that a virus may be defined as having “the potential for life.
in the same way that a disk containing the code for a computer program is only a potential program until it is put into the host computer."

Viruses are thought to have been associated with the earliest mammalian life forms and to have co-evolved with humans. They thrived as the rapidly urbanizing and commercial trends of the past 10,000 years brought humans into closer and closer proximity both with animals and with each other. Viral diseases were recognized very early. Early Mesopotamian records mention rabid dogs and Hector was described as "rabid" in the Iliad. Smallpox was known in the Ganges river basin by the 5th century BCE. The "age" of the yellow fever virus is unknown, but epidemics of the disease have been recorded as early as the 15th century, and it is speculated that shipboard yellow fever may have been responsible for early legends about "ghost ships"—ships whose entire crews mysteriously perished (Flint, Enquist, Krug, Racaniello and Skalka, 2000, pp. 4, 10).

In terms of the discovery of the mechanisms of infectious disease, viruses were latecomers. Bacteria were isolated as disease agents in the mid-nineteenth century (Oldstone). By the beginning of the 20th century, hundreds of bacteria had been isolated (Crawford, p. 12). Still, it was clear that there were many infectious diseases for which no bacteria could be identified. Late in the nineteenth century, European researchers were able to transmit a tobacco disease caused by a virus, but the organism could still not be seen and remained a subject of debate. Finally, in 1903, a French researcher, though still unable to see viruses, defined their main characteristics. They were filterable and therefore very small. They could not be seen under a light microscope and they could not be cultured in the same way bacteria could (Crawford, pp. 13-4). The yellow fever virus was, in fact, the first human virus to be identified (Flint, Enquist, Krug, Racaniello and Skalka, p. 10). Not until the invention of the electron microscope in 1938 could researchers actually see the particles they had described (Crawford, pp. 13-4).

Viruses are such a simple form of life (if they are life at all), that they cannot replicate by themselves. They are non-cellular and consist simply of a bit of genetic material, a nucleic acid, and a protein coat (Oldstone, p. 8-9). Crawford (2000, p. 18) describes them as "rogue pieces of genetic material which have somehow broken free from
chromosomes and found a way to reproduce independently.” Even the genetic material that they do possess is simple, containing between fewer than 10 genes (e.g., yellow fever) to a few hundred genes (smallpox). Bacteria contain thousands of genes. Humans possess tens of thousands (Oldstone, pp. 8-9). Not surprisingly, viruses are exceedingly small. Bacteria are between 1 and 10 microns (a millionth of a meter) in length. If a virus were to be expanded to the size of a person, a similarly treated bacterium would loom at the size of the Statue of Liberty. Light microscopes, which easily allow the human eye to see bacteria, are useless for the examination of viruses. They can be seen only with an electron microscope capable of magnifying size 100,000 times (Crawford, 2000 p. 7).

Viruses are obligate parasites. To survive as a species, they must insinuate themselves into more advanced life forms, plants or animals, that possess the ability to reproduce (Oldstone). They are very successful at doing this. Viruses basically borrow the abilities possessed by cells by entering them and “turning them into factories for virus production” (Crawford, p. 9). If enough cells in an organism are affected, disease, even death, can result (Crawford). Since viruses cannot endure long outside a living organism, it is not surprising that some of them find transmission by vector a successful survival mechanism. For the yellow fever virus, the mosquito is not merely a means of transmission, but also of reproduction. After ingestion, the virus multiplies in the insect’s intestines and travels to the salivary glands ready for injection into the next victim (Crawford, p. 25). But the introduction of a vector as a means of transmission also occasions greater complexity and therefore greater uncertainty into the system of transmission. The production of a degree of illness that confines the victim to bed allows mosquitoes a stable target and time to feed (Crawford, p. 37). It also suggests why vector-transmitted diseases tend to be more incapacitating than others (Ewald, 2000, p. 13).

Once injection has occurred, the virus is met by an army of defenders—the mechanical ones of skin and mucous membranes and the antibody producing lymphocytes. Once past these immunological defenses, viruses must enter cells in order to reproduce. But cells, which exists in a melange of substances which they must repel, are not easy to
enter. In fact, they possess a kind of lock and key mechanism which normally only admits a restricted number of molecules. It is the genius of the virus that it is able to mimic the molecular keys which allow them into body cells. The signs and symptoms of a viral disease are an expression of the particular molecular key that virus possesses (Crawford, pp. 29-33).

The causative virus of yellow fever is one of a group known as arboviruses (arthropod-borne), belonging to the *flavivirus* group, making it a relative of the pathogens causing Dengue Fever and hepatitis C, and transmitted by insects. More than 500 arboviruses have been identified. Of these, only about 100 cause disease in humans. Some, such as the yellow fever virus also establish themselves in animal reservoirs, in this case monkeys of the tropical forest canopy (Karlen, pp. 156-8; Harper, D.R., 1998; Yellow fever fact sheet).

**Clinical Course of Yellow Fever**

After a bite from an infected mosquito, there is a short incubation period (3-6 days) followed by the onset of flu-like symptoms and fever (Miller and Keane, “Medical Encyclopedia”). Body temperature may run as high as 105 degrees (F). The patient may suffer severely from nausea, headache, back and muscle pain, nausea and vomiting. After 3-4 days, there is a brief respite from the symptoms after which the disease may return in a more virulent form (Oldstone, p. 49). The fever reappears, the patient becomes jaundiced (hence the name of the disease) as the liver fails. Bleeding can occur from multiple sites including the stomach which produces the characteristic “black vomit.” Kidney function deteriorates. (“Yellow Fever Facts”, 2002 [www.who.int/inf-fs/en/fact100html](http://www.who.int/inf-fs/en/fact100html)). The patient experiences a “violent and uncontrollable” delirium as major organ systems fail (Oldstone, p. 49, Carrigan, p. 8).

Clinical descriptions, however, do not convey the impact of the signs and symptoms on those who experienced the 19th century epidemics. Trask (1997, p. 50 citing Hall The Manhattener in New Orleans) quotes the experience of a recovered patient from New Orleans who stated that the fever was like a civil war raging in his stomach.
while the temples and pulse beat a tatoo \[sic\] for the engagement. The head feels as if filled with molten lead which is burning the eyeballs. The back is like an unhinged door.

The final stages of the disease are particularly severe with jaundice, hemorrhages from various parts of the body, and the sign most associated with yellow fever—the “black vomit” (Carrigan). The color of the vomitus is that of blood acted upon by gastric contents and is simply a sign of bleeding from another site. The bleeding itself is caused by a lack of clotting factors as the liver fails. The ravages of the disease on the human body have been described by a number of 19th century southern observers. A New Orleans clergyman who was often called upon to offer comfort at the bedsides of its victims described his experiences during one of the city’s many yellow fever visitations.

Often I have met and shook hands with some blooming, handsome young man today, and...[later] I have been called to see him in the black vomit, with the profuse hemorrhages from the mouth, nose, ears, eyes, and even the toes; the eyes prominent, glistening, yellow, and staring; the face discolored with orange color and dusky red.

The physiognomy of the yellow fever corpse is usually sad, sullen, and perturbed; the countenance dark, mottled, livid, swollen, and stained with blood and black vomit; the veins of the face and whole body become distended, and look as if they were going to burst... (Duffy’s \textit{Parson Clapp of the Strangers’ Church of New Orleans} cited in Carrigan, 1988, p. 8).

Late in the nineteenth century, a Memphis resident in the city during an epidemic wrote to a relative about his experiences nursing a young woman—most probably his niece.
Lucille died at Ten O’Clock Tuesday night, after such suffering as I hope never again to witness. Once or twice my nerve almost failed me, but I managed to stay. The poor girl’s screams might be heard for half a square and at times I had to exert my utmost strength to hold her in bed. Jaundice was marked, the skin being a bright yellow hue: tongue and lips dark, cracked and blood oozing from the mouth and nose...To me the most terrible and terrifying feature was the ‘black vomit’ which I never before witnessed...By Tuesday evening it was as black as ink and would be ejected with terrific [sic] force. I had my face and hands spattered but had to stand by and hold her. Well it is too terrible to write any more about it (George, W.E. To My Dear Friend, cited in Humphreys, 1992, p.6).

The Report of the Portsmouth Relief Association devotes a number of pages to a vivid description of the disease. The writer states that

the organ in which the greatest suffering was experienced was the stomach. From the beginning the irritability in this viscus was intense, and the patient almost constantly complained of nausea and a sense of weight and oppression about the precordia. We do not know how better to describe this feeling of distress, than by repeating the language of a poor Irish woman, who declared that she was ‘smothering about her stomach.” A persistent disposition to vomit manifested itself, and the intolerance of the stomach was so great that the very mildest fluids could not be retained (pp. 143-4).

Indeed, one of the major goals of treatment was to prevent the persistent vomiting “which it was impossible to relieve by any resources of the healing art” (p. 155).

The author of the Report goes on to note that after 24-72 hours, the gastric symptoms might disappear and the patient might experience “a general feeling of ease and comfort” (p. 144). In these cases, recovery ensued. In cases that progressed to a fatal outcome, gastric signs and symptoms became even more pronounced and blood appeared
in the vomitus and stools. Finally, the disease affected the brain resulting in excitement, delirium, convulsions and coma. Hemorrhages were seen from a number of sites. Urine production ceased and death occurred.

Even today, half the patients who progress to the second stage of the disease die from liver, kidney and/or heart failure. Recovery takes a considerable time—up to a month. Less susceptible populations (e.g., Africans or Creoles with long histories of exposure), suffer the fever, joint pains and bleeding, but usually recover in a few days (Oldstone, p. 49; “Yellow Fever Facts”, 2002 www.who.int/inf-fs/en/fact100.htm). Although there is an effective vaccine for prevention, to this day, there is no effective drug therapy once the disease is established (Miller and Keane, Oldstone, p. 49). Mosquito control offers the best means of preventing or reducing the spread of the disease.

The Black Experience of Yellow Fever—African-American Background

Even before leaving their homelands, Africans and Europeans experienced emigration to America differently. Once on shipboard, Europeans were generally traveling toward freedom and opportunity, Africans away from it. Not surprisingly, the black populations of Portsmouth and Norfolk experienced the epidemic in a way different from that of the white populations. Blacks had been set apart from white Virginians both in

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12 Carrigan (p. 6-7) argues that the total mortality from the disease is considerably overestimated due to the large number of mild unrecognized childhood infections.

13 Mosquitoes, though no doubt present, were seldom mentioned by those suffering through yellow fever epidemics. One notable exception was the advice in a Philadelphia newspaper during the 1793 epidemic in that city recommending the pouring of cooking oil into rain-water casks and cisterns to control mosquitoes since they were “distressing to the sick, and troublesome to those who are well” (Powell, 1949, p. 23). And, in denying the presence of yellow fever during the great epidemic of 1853, The Weekly Delta (1853) declared that “we don’t believe Yellow Jack will favor us with his grim presence the year, for the simple reason that Providence does not afflict us with two curses at one and the same time; and, to add yellow fever to the present terrible visitation of mosquitoes, would be too much for human endurance (cited in Carrigan, 1994 p. 61). In the same epidemic, DeBow’s Review (1853) instanced the mosquitoes as a proxy for the efficacy of the city’s fever-fighting measures. “The smoke of the burnt powder and tar, wherever it appears, is a killing dose to the mosquitoes. This fact alone is proof that the concussion and smoke act as powerful purifiers (cited in Carrigan, 1994, p. 67).
terms of social discrimination and outright condition of servitude since colonial times. These conditions disadvantaged them by restricting their options in response to the crisis. However, they had retained a biological advantage from their homeland which greatly enhanced their ability to survive.

African-Americans living in Norfolk and Portsmouth in 1855 had undergone a long and tortuous adaptation to a Euro-dominated society. They were, in fact, actors in what Berlin (1998, pp. 3-4) has described as the “minuet” between slave and master—the constant re-negotiation of relationships between two mutually dependent groups. Now, less than a decade before the Emancipation Proclamation, African-Americans in Portsmouth were living in the final flower of a fully developed slave society.14

Blacks arrived in the New World to serve as slaves only 10 years after Columbus' great discovery (Palmer, C.A., 2000, p. 3). They were but the beginning of the waves of unfortunate peoples who were forcibly brought to build the Europeans’ dream of remaking a new continent in their own image. Probably 12-15 million Africans were cargo on slaving vessels with most being taken to Latin America and the Caribbean (Palmer, p.7). The large numbers transported to Spanish and Portuguese colonies were not surprising. Both nations had a deeply rooted tradition of bringing enslaved Africans to their own shores (Palmer, p. 7-9). The British colonies entered the slave trade later and, by 1807 (after which the trade was prohibited) had carried about 400,000-600,000 captured people to North America (Wood, 2000 p 71; Kolchin, p. 22).

In 1619, more than 20 captured Africans disembarked from a Dutch ship at the settlement at Jamestown, Virginia (Palmer, C.A., p. 53). They were likely the first Africans brought specifically for the purpose of slavery in North America although blacks, both slave and free, had participated in Spanish conquests on the North American continent (Wood, 2000, pp.53-58). Until the second half of the 17th century, the eventual fate of Africans imported to North America as slaves was somewhat uncertain. Indeed, at

14 Berlin (pp. 8-14) has delineated the difference between a society with slaves and a slave society. In the former, slaves are just one form of labor among many. In the latter, he explains, "slavery stood at the center of economic production, and the master-slave relationship provided the model for all social relations..."
that time, 29 percent of blacks in the country were free (Wood as cited in Kolchin, 1993, p. 16). Berlin (1998, pp. 29-46) describes the rather fluid situation of what he labels the “charter generations” in the Chesapeake region—a situation where slaves might farm independently, maintain their own households, and participate in an active slave economy—where they could buy their freedom and sometimes become landowners and even slave holders themselves. Indeed, many became participants in the institutions of the wider society, active in the churches and unhesitating in using the legal system to protect themselves.

Many Europeans came to the continent under articles of indenture—a condition of servitude that was time-limited (Wood, p.65) and voluntary, (Kolchin, pp. 16-17) but which, in its brutality, resembled the model of African enslavement (Kolchin, pp.15-16). At one point, Virginia’s population of white servants outnumbered that of slaves three to one (6,000 to 2,000) (A New Description of Virginia cited by Phillips, 1969). There was at least some possibility that some sort of indenture arrangement might apply to Africans—more so, perhaps, because the British-dominated colonies had no lengthy history of dealing in slaves. That changed, however, with the establishment of English sugar plantations in the Caribbean. As Wood has observed, “English experiments at Barbados and Providence Island showed that Protestant investors could easily overcome their moral scruples.” (p. 65) In 1660, the Royal African Company was created for the purpose of entering the slave trade (Wood, p. 66). By the time the Company’s patent expired in 1698, the trade was well established and fell easily into the hands of independent traders both from England and the colonies (Wood, p. 67).

Still, there was no logical reason that slavery in North America should become race-based. From the beginning, the labor force for the colonies was mixed in terms of race, class, economic position and political power. Native Americans were exploited as labor early on, however, they had a number of deficits as a long term solution for labor requirements. First, because of their lack of resistance to offensive organisms (e.g., smallpox) brought by the Europeans (and later as victims of yellow fever brought by Africans), there were simply not enough of them to serve as the legions of workers
necessary to remodel continents (Kolchin, 1993, p. 8; Oldstone, 1998, p. 4). Indians too were on their home ground and could easily escape into neighboring territories, (Wood, p. 66) and Indian slavery was inhibited by colonial policies that insisted either on killing Indians or driving them as far away as possible (Kolchin, p. 8). Indentured Europeans were, for a time, a ready labor pool. For most of the 17th century, they filled most of the labor needs of the British colonies. But they proved unsatisfactory on a long term basis. When economic conditions at home were relatively good, the supply of indentured servants dried up. There was also a feedback system. Potential workers in Europe were in contact with those who had gone before them and were able to obtain information concerning good and bad masters and positions. And above all, once the term of indenture was completed, the worker became free to sell his/her own labor. After 1680, the numbers of indentured servants in the Chesapeake colonies decreased sharply (Kolchin, p. 11).

Enslaved Africans offered numerous apparent advantages as a labor force. First, the supply of people seemed unending. Africa is a very large continent after all, and slavery, though of a very different type than the prevailing practice in North America, had been an established cultural practice in much of it since biblical times (Kolchin, 1993 p. 4, 20; Lovejoy as cited in Harris, 2001 p. 6; Miers and Kopytoff as cited in Harris, p. 6; Oliver, 1991, pp. 116-129). A number of African leaders proved willing to cooperate with the slave-hungry American and European traders (Wood, p. 66; Kolchin, p. 19). At the same time that the numbers of indentured servants were declining, Great Britain used its new dominance of the oceans to establish hegemony in the African slave trade (Kolchin, p. 12). Once transported, Africans were completely cut off from their homeland. This eliminated both the problem of negative feedback to the home country and that of escape into familiar territory. And whereas white, indentured servants might escape and disappear into the general population, Africans' dark skin marked them as possible escapees no matter where they went (Kolchin, p. 13). Above all, institutionalized slavery ensured not only one generation but many generations of free labor (Kolchin, p. 13).

Although there were many historic justifications for slavery (e.g., the price to be
paid for a loss in battle), one line of thought held that enslavement was justified on the basis of “otherness.” In the Mediterranean Basin, for example, otherness was defined above all by religion. “Infidels” be they Christian or Muslim were routinely subject to slavery (Wood, p. 65; Kolchin, p. 5). The English saw Africans as “other” in at least three basic ways. First, they were a different race. Second, they were “savage” or “uncivilized.” Third they were “heathens” (Kolchin, 1993, pp. 14-5). But as enslaved Africans became both American and Christian, these latter characteristics became moot. In the United States, in the 17th century, race gradually became the basic criterion for condition of servitude. Africans came to be described as “black” rather than as “heathen” and the legal system, which had been vague with regard to the status of African servants was modified to ensure that people so described were condemned to perpetual serfdom (Wood, p.68; Phillips, 1969, pp. 75-8). Crucial to the process was the regularizing of inherited rights. In 1662, the Virginia Assembly reversed English Common Law which held that children inherited the status of their fathers to its opposite. Thereon, all children born to enslaved women would, themselves, also be slaves. Other colonies soon followed Virginia’s lead (Wood, p. 68). Law after law was passed gradually extinguishing the rights of residents of African origin. Virginia again acted as a colonial bellwether by enacting a comprehensive slave code in 1680 and strengthening it in 1705 (Kolchin, p. 17; Wood, p. 72).

As racism bred slavery, so did slavery breed racism—a development which affected both enslaved and free blacks. Portrayals of blacks as inferior became more common. Intermarriage was forbidden. In Virginia, freed slaves were required to leave the colony within six months. Even as their condition deteriorated, the numbers of blacks in the colony rose dramatically. By 1720, blacks constituted almost a third of the population—up from seven percent only 40 years before. Their number continued to grow during the remainder of the century along with the expansion of the tobacco economy (Wood, pp. 73-4, 82). By the time of the Revolution, forty percent of the population of Virginia were slaves (Kolchin, p. 25).

With the proclamation of independence, blacks in America found themselves in an
anomalous position. People living with few or no civil rights were embroiled in war that was all about freedom. Both sides used African-Americans as pawns of war, promising freedom for fighting on one side or the other, and blacks were not slow to avail themselves of the opportunities the conflict presented. Some joined the British, others the colonial rebels. A number of Portsmouth slaves joined British forces led by Benedict Arnold. Others still took advantage of the prevailing social disorder to escape (Littlefield, 2000, pp.113-18; Wertenbaker and Schlegel, 1962, pp. 71-2). The escapees included the 87 slaves owned by John Willoughby in Norfolk County (Kolchin, p. 72). But at the end of the war, the institution of slavery endured both north and south. There was, however, some softening at the margins. Most northern states passed emancipation legislation. Freedom in these domains would come slowly, but it would surely come. Virginia as well as Delaware and Maryland made manumission easier. As a result the free black population expanded considerably.

Freedom, however, did not mean acceptance into the community as an equal. Thomas Jefferson, one of the many founding fathers who were slave owners and the author of the phrase “all men are created equal,” probably represented a not uncommon attitude of white Virginians toward their black counterparts. Although blacks were human beings with the same rights of life and liberty accorded to whites, the races could not be expected to live together. Blacks, therefore, should be returned to Africa (Littlefield, pp. 128-30). Even with such conflicted attitudes on the part of white Virginians, it is conceivable that slaves may have been freed on a larger scale in the commonwealth had not economics intervened. With the exhaustion of the tobacco industry in the state and the hunger of the lower south and the expanding west for labor in the anticipated absence of the trans-Atlantic trade, slaves themselves became a cash crop for the upper south (Littlefield, p. 133). Enslaved families, who had already been torn asunder by the ravages of war, were now rent again for profit. Between 1790 and 1810, 100,000 slaves from the Chesapeake region were sold and shipped to newly-opening cotton lands (Littlefield, p. 154). From 1830-1860, about 300,000 slaves were transported south from Virginia to be sold. Even free blacks were liable to be captured and sold (White, 2000, p. 171). The
misery-based trade contributed to the economic revival of the region (Kolchin, p. 98).

As the domestic slave trade expanded, the potential window of opportunity for widespread manumission closed. White attitudes hardened. Pro-slavery arguments denying the very humanity of African Americans supported the new economic realities (White, p. 173). The Virginia legislature, which had supported education for blacks reversed its position and also forbade them to carry firearms (Littlefield, p. 168).

Paradoxically, however, even in the midst of the strains imposed on them by perpetual uncertainty, the physical treatment of most slaves improved. Basically, it had to for white owners needed now, in the absence of the trans-Atlantic trade, to keep their “property” healthy enough to work and, most important, to reproduce (White, pp. 172-3).\(^\text{15}\) In this, they were notably successful. The North American slave population was already expanding by natural increase as early as 1740 (Harris, 2001, p. 4). The million slaves present in North America when the slave trade ended in 1808 swelled to 4 million by 1860 (Kolchin, p. 22). Slave women generally bore children every 2 \(\frac{1}{2}\) years from the age of 19 to the age of 40 (White, p. 183). Masters were known to bestow gifts on the births of slave children (White). Thomas Jefferson himself, declared that fertile slave women were more profitable than male slaves (Berlin, 1998, p. 127), and the penalty for infertility could be sale (White, p. 174).

Not surprisingly, the threat of black insurrection rose in this constrained climate. As the century opened, a planned revolt in Richmond went awry and its leaders were executed (White, p.169). Perhaps the most famous of all slave revolts occurred in Virginia’s Southampton county in 1822. Nat Turner led about 70 slaves on a killing spree. About 60 whites of both sexes and all ages were murdered. Although quickly suppressed, the uprising occasioned fear throughout the white south. Severe measures restricting activities such as religious services and travel were imposed (White, p. 198).

\(^{15}\) Black life expectancy (30 years for males, 32 years for females) in the antebellum south at this time was eight years less than that for whites and declining (Byrd and Clayton, 2000, p. 286).
This resulted in the oddity of treating slaves well to keep them content and fertile while at
the same time treating them badly to instill fear.

It is important to note that, by the time of the epidemic, blacks in Norfolk and
Portsmouth (as well as in the rest of the country) were solidly American. In fact,
American-born blacks (also known as Creoles) outnumbered African-born blacks by five
to one at the time of the Revolution (Kolchin, p. 38). This population differed
considerably from blacks arriving in America in earlier years. In the beginning of the slave
trade, most captives were male. They, of course, spoke many languages—none of them
English. They often bore marks of cultural expression on their bodies (e.g., filed teeth and
scarification), and they practiced many different religions. Once here, they were usually
housed in barracks and put to work on the land. (Berlin, 1998, pp. 109-114) Mid-
nineteenth century African-Americans looked and were very different from their forbears.
The male/female ratio had normalized (Kolchin, p. 39). They lived in families and spoke
English. They wore American style clothes and had generally abandoned tooth filing and
scarification. They were likely to be practicing Christians. And they worked
everywhere—in the fields, in homes, in factories, as craftspeople. In fact, as slavery was
considered to be necessary to maintain the plantation system, it was also viewed by many
white southerners as the means to urban growth and sectional progress. Slaves labored at
a comprehensive range of urban tasks (e.g., manufacturing, transporting goods) to fulfill
the ambitions of their owners (Goldfield, 1982, p. 89). Slaves, though, were still more
likely to be employed in the countryside rather than the city. In 1860, only about 5
percent of all slaves lived in towns of more than 2,500 people (Kolchin, p. 178).

All blacks in the south were not enslaved. Entering the century of the epidemic,
about ten percent of blacks in the upper south were free, a number that remained fairly
stable until mid-century (Kolchin, pp. 81-2). For free blacks, cities offered the greater
opportunities both for employment and a social life. Most free blacks were unskilled, and

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16 Certainly, many outward signs of African culture disappeared in America. However, the
extent to which African-American culture retains its African roots is a matter of considerable
debate (Kolchin, pp. 40-1, 60-1).
most unskilled jobs were in cities. They were also numerous enough to form churches, schools, and other social groups. In fact, free blacks were more urbanized than whites. By 1860 in the south, about a third of free blacks lived in cities—twice the rate of whites (White, p. 203).

The word "free" must be understood in relative terms. White (p. 204) refers to blacks as being "quasi-free." In the south, free blacks were experienced by the white population as a threat to slavery and therefore to the prevailing social, economic, and political order. In the north and the expanding west as well as the south, free blacks were seen as competitors to white workers. Depending on location, "quasi-freedom" included restrictions of freedom of movement, the payment of extra taxes, limitations on freedom of assembly and travel, curfews, exclusion from public places, mob violence and continual threats of falling back into slavery (White, p. 204-5, Berlin p. 285). In Baltimore, the law prescribed that free blacks were liable to the same punishments as slaves and for the same offenses and, indeed, as the grip of slavery loosened in the cities, public and social policies were directed more at the issue of race rather than condition of servitude. In short, fewer and fewer differentiations were made between free blacks and enslaved blacks. Race and race alone became controlling (Wade, pp. 249, 266-77). Even so, both unskilled and skilled free blacks were able to carve out occupational niches—mainly by accepting lower wages than whites in the same jobs. Women worked mainly in domestic service occupations. Men worked in factories, and filled openings in trades (e.g., carpentry) when white men were not available. They also established a monopoly on the barbering trade in the south (White, p. 206). Despite the restrictions against them, free blacks advanced economically in the decades prior to the Civil War. In Virginia, black property ownership doubled between 1830 and 1860 (Sowell, 1979).

For most, slave or free, the church was the center of black life. White opinion on black churches was divided. Some believed that black ministers diminished the authority of the master and that relatively independent black organizations such as the church threatened the authority of the slave society (Wade, p. 83). Others came to believe that Christianity made blacks more controllable and therefore less dangerous, but did not
believe in integrated churches. And for all, there was the problem that instruction in the Scriptures might include instruction in reading and writing (Wade, p. 173). The notion that churches must be segregated allowed for the growth of strong African American churches—organizations that provided schools and served as centers of cultural life for their communities (White, p. 207). Urban free blacks also formed benevolent associations that provided for members of the community in times of need.

Urban African-Americans

In some ways, blacks in urban areas were considerably better off than their counterparts in the rural south. Generally, they were better housed, better fed, and better clothed (Wade, pp. 115-34). But other forces were at work to improve the condition of the urban slave. Historically, cities have provided an escape for those trapped in traditional states of legal or economic bondage. Die Stadluft macht frei. "The air of the city makes free." was a literal truth in medieval cities where escaped serfs who managed to live undetected within city limits a year and a day were liberated automatically (Pirenne, 1925/56, p. 138). The liberating effects of urban environments attracted fugitive slaves from the countryside and the traffic in and out of cities made it easier for urban slaves to escape (Wade, p. 215). But all urban slaves enjoyed a freer life than their plantation counterparts, and, in fact, no significant slave uprising ever occurred in a southern city (Berlin, 2003, pp. 78-81; Wade, p. 226). A Kentuckian noted in 1848 that “slavery exists in Louisville and St. Louis only in name” and continued

there are two things that always, and under all circumstances, abrogates slavery. The first is dense population...and the next [is] the intelligence of slaves. Both of these are silently and imperceptibly working their legitimate results (Louisville Daily Journal February 22, 1848 cited in Wade, 1964, p. 3).

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17 It is likely that there were far more literate urban blacks than the white population believed. Despite laws against teaching slaves to read and write and frequent warnings its danger to the (white) society, black literacy continued to spread in the cities (Wade p. 173).
Other writers of the time claimed that slavery could only survive in the countryside and Frederick Douglas himself pointed out the advantage of urban conditions for the slave when he stated that his life as a slave in Baltimore was a “paradise” compared to “plantation existence” (Douglas, My Bondage and My Freedom cited in Wade, p.246).

But the relative freedom enjoyed by urban slaves was not a long-lived phenomenon. Wade (1964, p. 3) states that less than 40 years before the period under study, the substantial (20 percent) urban slave populations seemed stable and vigorous. (The discussion of urban slavery is drawn from Wade, 1964.) But by 1860, slavery was disintegrating in southern cities. As noted elsewhere in this work, the south, though primarily rural, still participated in the urbanization of 19th century America. Initially, as southern cities grew, the numbers of slaves within them grew also, at times even outpacing the growth of the white populations. But by mid-century, the numbers of slaves in southern cities had either plateaued or was declining (Wade, p.16). Not only did the numbers of urban slaves decline, but their sex ratio changed also. Males, especially young males, were likely to be sold for plantation work while females remained in the cities to perform domestic work (Wade, pp. 23, 28). While life in the countryside tended to be stable, slaves in the city were dealing with a dynamic environment.

But it was an environment that allowed them far more freedom of movement and chances to interact than was afforded their plantation counterparts. The close housing arrangements necessitated by city life meant that slaves were in much closer contact with their masters but also with slaves of other masters housed in adjoining quarters (Wade, pp. 56-7).18 Both men and women were expected to run the errands necessary to the maintenance of city households. Men often worked in industries and in public works. Slaves performed most menial jobs and sometimes more skilled labor in the building and other trades (Wade, pp. 29-30). At the same time, living in close proximity to their owners, they (and their children old enough to perform simple tasks) were “on call” all or most of the time. Domestic crises or even the presence of guests in the house increased

18 Masters were not blind to the threat of increased slave contacts outside the household. Urban slave quarters were usually surrounded by high walls (Wade pp. 59-60).
the duties of slaves. And if there was thought to be not enough work at home, both adult and child slaves were "hired out" for other work. In many cities, the market for "hires" tended to be very fluid with slaves hired out for days or for lengthy periods. Slaves might also serve as firemen, a situation which, in Portsmouth, caused the Common Council to authorize special freedom of movement passes for black fire fighters.

The practice of hiring out had unanticipated consequences. In New Orleans, the city itself brokered the labor of hired slaves and thus inserted itself between master and slave. Elsewhere, many owners had slaves find their own employment, often simply paying their masters a certain sum per month and possibly finding housing at some distance from the owner, an arrangement as common as it was illegal (Wade). While such arrangements hardly constituted freedom, they were certainly closer to a free state than any arrangements enjoyed by plantation labor...and sometimes resulted in slaves accumulating enough money to buy their freedom (Wade). Since black labor was always sold for less than that of whites, these arrangements could cause considerable resentment among whites who were employed in similar jobs. But the most threatening aspect of this arrangement for many whites was the degree of freedom it offered for the hired out slaves. Indeed, the connection between owner and slave did often become extended, remote, and perhaps, at some point, non-existent. In 1860, 400 hired slaves were noted in the census as having "owner unknown" (Wade, p. 51). As a group of South Carolinians put it,

The evil is that he [the slave] buys the control of his own time from his owner...He avoids the discipline and surveillance of his master and is separated from his observation and superintendence...slaves are permitted to go at large, exercising all the privileges of free persons, making contracts, doing work and in every way being and conducting themselves as if they were not slaves...It seems...that the evil is the same...whether the slave so working out on his own account, is mechanic or handicraftsman, a stevedore, a laborer, a Porter, a drayman or anything else (Mobile Commercial Register November 7, 1833 cited in Wade, p. 52).

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Once more, hiring out exposed slaves to another way of life.

The city, with its intelligence and enterprise, is a dangerous place for the slave. He acquires knowledge of human rights, by working with others who receive wages when he receives none; who can come and go at their pleasure, when he from the cradle to the grave must obey a master’s will (De Bows Review cited in Wade, p. 245).

Independence of the slave was assumed to be not only a threat to white dominance, but also a threat to the well-being of the slave. It was assumed by many white writers that unsupervised slaves would become idle, discontented, disorderly and turn to criminal acts (Wade, p. 245-6). (It should be recalled that criminal acts were liberally defined for the black population.) A New Orleans editor exemplified this view, speaking of the absolute idleness, the thriftlessness, the laziness, the dishonesty, the drunkenness, the proneness to vagrancy and vice of the negro [sic] when free from all the restraints of servitude (New Orleans Bee April 16, 1858 cited in Wade p. 251).

Southern legislatures passed bill after bill against these arrangements, but the fact was that urban economies could not do without the available, fluid labor pool that hired out slaves provided. And masters often found it exceptionally profitable to simply receive payments from an independent slave without having to provide the slave’s support. For the slave, hiring out could mean the opportunity to live away from the master. In the antebellum period, slaves took increasing advantage of opportunities to live somewhere other than their master’s slave quarters (Wade). We see evidence of this practice in the Portsmouth epidemic when a slave owner found it necessary to travel to his slave’s home. In this case, the slave apparently enjoyed a warm relationship with his master. In some cities, slaves with poorer relationships to their masters kept their own quarters as places of semi-
concealment (Wade).

Hiring out was only one of the peculiarities of urban life that threatened the restrictions of movement customarily placed on slaves. Cities often used systems of passes to limit slave movements, but these proved to be a major inconvenience to whites. Owners had to ensure that slaves had the proper passes, and a slave delayed on an errand might be detained creating even more problems. In any case, it was necessary for slaves to leave their masters' homes almost constantly with every instance an occasion for meeting new people, learning new ideas and forming associations exclusive of the master-slave relationship. These included the opportunities to engage in trade (illegal, but not uncommon) and to gather at homes, grog shops, vacant lots or even on the streets with other slaves or with free blacks. Slaves often took advantage of their mobility not only to socialize, but to learn to read. Newspaper articles warned against these practices, but owners simply could not establish the kind of control possible on plantations in the urban environment (Wade). And slave owners faced a conundrum. They were the final authorities over their slaves' behaviors. But under urban conditions, municipal authorities were charged with keeping order. In some cities, whipping and/or imprisonment was undertaken by the civil authorities at the request of slave owners. Such arrangements relieved owners of an unpleasant job, but helped to set up a dual system of authority, for municipalities also kept order themselves by detaining and punishing slaves as they saw fit – thus undermining the authority of the master. Indeed the substantial civic apparatus necessary to maintain public authority over slaves (armed patrols, jails, public whippings) were often noted by northern visitors (Wade, pp. 97-8). The presence of such apparatus offered only a glimmer of the dangers and humiliations involved in “living while black” in an antebellum southern city. Blacks were not allowed to smoke on the streets, to congregate at each other's homes, to show impudence to a white, to be abroad without papers, or to behave in almost any manner that demonstrated independence. Any of these “offenses” could mean jail and/or whipping, all without Constitutional protections (Wade p, 181-91). And since, urban blacks were more likely to be sold than rural blacks (Wade, p. 197), a slave considered to be unruly might find himself in a slave market.
Effects of the African-American Experience of Yellow Fever

The white belief that blacks were immune to yellow fever was widespread in the south and was sustained by mortality statistics in a number of southern cities. New Orleans, Memphis, Savannah, and Charleston all reported far lower black than white mortality rates in times of yellow fever (Wade). In the great New Orleans epidemic of 1853, the black death rate was only 1.4 per thousand while the white rate was 63 per thousand (Carrigan, 1994, p. 71). While medical thought tended to focus on the susceptibility of poor and especially immigrant whites, notice was taken of the relative resistance of blacks. But even in the last year of yellow fever in the United States, racist doctrine trumped biological theory. If immigrants died of fright during yellow fever epidemics, blacks survived because of their “fatalistic attitude” and their lack of fear or worry (Carter Territory of New Orleans. Louisiana Courier. New Orleans Medical and Surgical Journal cited in Carrigan, 1994, p. 243).

The matter of black resistance to the disease did not go unnoticed by those seeking to buttress arguments both against and for the institution of slavery. Abolitionists contended that the presence of yellow fever in the slave states of the union was a punishment for slavery (Carrigan, 1994, p. 337). Pro-slavery advocates responded with arguments of their own. Slavery “protected” blacks by keeping them in the south so they would not lose their immunity to the disease. Yellow fever also provided an economic argument for using black rather than white labor since whites would be less able to continue working during times of epidemic (Carrigan, 1988). Perhaps the most pernicious pro-slavery arguments were couched in medical language. Dr. Samuel A. Cartwright (New Orleans Medical and Surgical Journal, 1853 cited in Carrigan, 1994, p.255-6) set forth a bizarre chain of “medical” logic that devalued both African Americans and recent immigrants to the south in his justification of the peculiar institution.

19 The question of yellow fever was only a part of the medical arguments for and against slavery. Savitt (1988) provides an overall view of the issue. The issue of a special black biology was also used to buttress the arguments for a “special” southern medicine discussed elsewhere in this paper. (Shryock, 1930)
Nature scorns to see the aristocracy of the white skin—the only kind known to American institutions—reduced to drudgery work under a Southern sun, and, has issued her fiat, that here at least, whether of Celtic or Teutonic origin they shall not be hewers of wood or drawers of water, or wallow in the sloughs of intemperance, under pain of three fourths of their number being cut off...

Dr. Cartwright went on to explain that the disease occurred in immigrants from the north because of their intemperate habits but also because of their “drudgery labor” in the southern sun—labor for which blacks were intended. Yellow fever occurred almost exclusively to those

unacclimated persons who attempt to jostle the negro [sic] from his stool, and to take from him those outdoor, laborious employments in the sun, wisely given to him as a precious inheritance to lift him up from brutish barbarism upon the platform of civilization, by forcing him to expand his lungs and oxygenate his blood.

Although slavery died in the United States only a few years after the yellow fever epidemic, the racist biological theories used to support it lived well on into the next century.

Medical Response to the Epidemic

What treatments were used to deal with the fever? A New Orleans physician of the time, well experienced in the treatment of patients with yellow fever, maintained “Yellow fever is a self-limited disease; it is to be managed.” He claimed also, that no matter what was done, the mortality was 33-75 percent (Report of the Philadelphia Relief Committee, 1856, p.24). Duffy (1996, pp. 168-9) confirms that the great New Orleans yellow fever epidemic of 1853 had convinced local physicians that no form of treatment was effective. “Good nursing and minimal medication provided the best hope for yellow
Many physicians were unconvinced by the New Orleans model. Some followed what was called an "expectant plan" of therapy. At the onset of the fever, the patient was put to bed and covered with blankets. The feet were immersed in mustard water. To promote perspiration, warm drinks were given, but in limited quantities. A purge was accomplished by means of castor oil and a warm soap suds enema. The room was darkened and the patient was made to rest for several days. Local applications of mustard or cold packs were used to relieve localized pain. Some Portsmouth physicians treated the disease with calomel and large doses of quinine. In an attempt to limit vomiting, food and fluids were limited. When vomiting occurred, an astounding variety of remedies (e.g., turpentine, silver nitrate, opium) were administered. Not surprisingly, no method of treatment was demonstrated to be more effective than any other. Supportive care for patients and convalescents included the use of bay rum, cologne water (used as a disinfectant), and lemons, arrowroot, tapioca, sago, barley, ice cream and oatmeal to feed convalescents (Report of the Philadelphia Relief Committee, p. 93).

The dizzying variety of treatment regimens clearly reflected the state of American medical therapeutics of the time. We in the 21st century have certain expectations of medical practice that were simply not present 150 years ago. We expect our health care practitioners to have standardized training and state-sanctioned practices. We suppose that quantifiable research provides the underlayment for diagnosis and treatment. We expect specific diagnoses and treatments based on explicit etiologies. In looking at mid-nineteenth century diagnostic and therapeutic modalities, it is necessary to abandon our fixed ideas of what they should be and examine them on their own terms—as, indeed, historians 150 years hence now will be doing vis a vis our own medical practices.

It is fair to say that 19th century physicians did not treat disease per se, but rather the patient as a totality. A host of environmental influences were thought to affect both the nature of the patient and the nature of the disease. Moreover, the nature of the patient himself/herself (temperament, physique) provided a unique template for the action of any particular disease (Carrigan, 1994, p. 294). No case was ever, therefore, like any other.
case and treatment had to be individualized. A New Orleans physician elucidated this approach.

As to the details of the treatment, they must be left to the judgment of the physician. Any specific treatment is just as absurd in yellow fever, as in any other disease. The physician is not called to treat an abstraction, but a sick man. The treatment must be varied accordingly to the peculiarities of the cases. Remedies, beneficial in one case, may be most injurious in another; and success in practice will depend, in a great degree, upon the sagacity and acquirements of the physicians (New Orleans Journal of Medicine and Surgery, November, 1843 cited by Carrigan, 1994, p. 295).

The disparities in the treatment of yellow fever were the reflection of where American medical practice found itself in the mid-nineteenth century. As Duffy (1959, p. 53) has remarked, from medieval times to the time of the period under study, there had actually been little change in medical practice. In fact, 19th century medical theories were of even greater antiquity reaching back even to the works of Hippocrates and Galen (Duffy, 1959, p. 54). However, the forces that would bring about the coming transformation were already at work. American medicine entered the 19th century as an exemplar of “heroic practices.” Bleeding, purging, toxic doses of drugs were standard methods of treatment. Nowhere, in fact, were these methods more in evidence than in the Philadelphia yellow fever epidemic of 1793. It was the renowned Dr. Benjamin Rush who was the strongest proponent of energetic bleeding, believing it relieved “capillary tension.” (Hays, 2000, p. 216). By the end of the century under study, the era of scientific

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20 Although nursing care was, and still is, crucial in the care of yellow fever victims, the discussion in this paper centers on medical practice since nursing was not yet established as a profession at the time of the epidemic.

21 Dr. Rush believed that capillary tension was at the root of all disease. Unitary theories of diseases were common at the time (Hays, 2000, p. 216). At the present time, there is an odd echo of unitary theory as accumulating literature points to theories of inflammation as being
medicine was well underway. This is a practice style familiar to all of us—technological, specific, putatively based on laboratory science.

Rosenberg (1992) describes a nineteenth century situation where an increasing belief in empiricism coupled with the competition from a variety of healers offering less unpleasant treatments drastically reduced the use of heroic practices well before the advent of scientific medicine. But the use of such practices was, in fact, based on an understanding of health and disease common to both physician and patient. The body was seen as being in dynamic interaction with its environment. And as the environment might affect the body, so too could one part of the body affect other parts. The mind was also in continuous interaction with the body. The balance required among all these components to maintain health was obviously somewhat precarious. Diagnosis and treatment was aimed at restoring this balance. Physicians of the time, lacking modalities that would expand their perceptions beyond the sensory, relied on physical diagnoses and treatments that produced an obvious result. Treatments were “successful” when they produced the desired effect—sweating, vomiting, blistering, etc. By 1830, these methods were under serious question. Nevertheless, they continued, though practiced less and less, through much of the century. (This discussion is drawn largely from Rosenberg, 1992, pp. 9-31.) A number of southern physicians, too, had become disenchanted with the harshness and ineffectiveness of traditional treatments, moving to more moderate dosages and often substituting quinine for the poisonous calomel (Duffy, 1959).

22 By the time of the yellow fever epidemic, the ambivalence concerning drastic treatment is clearly reflected by the advice of the New Orleans physicians’ empiric advice to rely on comfort measures versus responsible for a wide variety of illnesses (Faloon, 2002).

Quinine was widely used as a treatment for malaria, the most common endemic disease in early 19th century America. Because of ignorance of its proper use, it's success was limited. It was often used against yellow fever in the belief that the disease was an intensified form of malaria (Rothstein, 1985, pp. 56-7, 60).

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the belief by other practitioners in the more traditional regimens.23, 24

With confusion prevailing in the regular medical community, and given the anti-regulatory climate of the times (medical licensing as we know it did not exist) and an active free market economy, it is not surprising that a variety of practitioners enjoyed thriving practices (Hays, 2000, p. 213, Duffy, 1993, pp. 139-41). In the south, the most popular were Thomsonians, hydropaths and homeopaths (Duffy, 1959, p. 67). The first-named was founded by Samuel Thomson, a New Hampshire farmer. His system, based on botanics and natural treatments that could be practiced in the home, attained considerable popularity in both the north and the south. Hydropathic practitioners based their therapeutic regimens on moderate exercise and the use of cool water both internally and externally. Homeopaths, who based their system on the teachings of a German physician, Samuel Hahnemann, offered gentle doses of substances to enhance the body’s own immune system (Duffy, 1959). Clearly all these methods offered treatment without tears, a far less fearsome prospect than most regular medical interventions.

But even within the regular (allopathic) medical community, there was little standardization of preparation. Apprenticeship, common in the beginning of the century, was less common by mid-century, but had not entirely disappeared by the time of the epidemic (Rothstein, 1985, pp.85-7). There was dramatic growth in the number of medical schools, but most of these were proprietary, not affiliated with institutions of higher learning, offered meager curricula and little or no laboratory or hospital experience.

23 “Ambivalence” may be too mild a term. Duffy (1959, p. 55) reports that disagreements over differing theories “reached a point at which opposing medical men resorted to fists, knives, and pistols.” The city of New Orleans went so far as to limit the membership of physicians on its board of health because of their disagreements. An earlier board in New York City had excluded them altogether for the same reason (Duffy, 1993, p. 149).

24 Not only had New Orleans physicians gained substantial experience in the treatment of yellow fever due to its continual presence in their city, they were also, due to their French connections, among the first American practitioners of the Paris Clinical School of medical treatment. A forerunner of scientific medicine, the Paris Clinical model advocated autopsies to determine causes of death and the modification of therapeutics based on those findings (Duffy, 1993, pp. 71-3). Physicians in New Orleans also had unusual access to large numbers of corpses for autopsy due to great numbers of deaths in the city’s Charity Hospital (Duffy, 1993, p. 133).
(Rothstein, 1985, pp. 87-100). A survey completed in 1847 documented that about one quarter of Virginia physicians had neither a medical degree nor a license (Duffy, 1993 p. 144). The obituaries of the Norfolk physicians who died fighting the epidemic confirm the variety of preparation necessary to call oneself a physician of the time. A record of apprenticeship and “attending lectures” for one, a university degree, hospital residency and study abroad for another, apprenticeship and a medical diploma for still another clearly demonstrate the near-chaotic state of accepted preparation for medical practice at mid-century (Forrest, 1856, pp. 231-48).

Fevers of all kinds presented a diagnostic puzzle. To us, a fever is a symptom only—a non-specific finding common to many underlying conditions. To 19th century physicians, fevers in a very real way were the disease. Estes (1997, p. 1) outlines the categorical divisions of fevers, each having its own implications for diagnosis, treatment and prognosis. First, it should be noted, that fevers were observed not by measurement of temperature, but by noting the pulse rate. An increased heart rate implied an increased temperature. Other accompanying signs and symptoms including loss of appetite, general disability, headache and “a difficulty in performing some of the vital or animal functions" also presented as fever (Rothstein, 1985, pp. 42-3). Fevers could be intermittent (e.g., the periodic exacerbations of malaria) or continued (fevers typical of acute disease processes that peaked in a limited time and then began to wane). Fevers were further defined by the signs and symptoms that accompanied them, e.g., jaundice, or by poorly-defined conditions such as inflammation (Estes, 1997). An additional complication was the contemporary concept of “blended” fevers. It was thought that a number of different kinds of fevers (numbering 27 according to the 1847 New Orleans Board of Health mortality reports) could merge with each other with milder fevers morphing into more severe presentations (New Orleans Medical and Surgical Journal, September, 1847 and January, 1848 cited in Carrigan, 1994, p. 47).

25 There is a relationship between body temperature and heart rate. Typically, when a patient’s temperature is increased, we usually expect to find an increased heart rate also. However, 21st century clinicians do not assume the presence of fever in the presence of an increased heart rate.
Understanding of the etiology of the epidemic drove not only individual therapeutic regimens, but also the public health response of both cities and communities where refugees might flee. Inherent in this understanding were fundamental conflicts concerning both the cause(s) of the disease and the manner of its spread. These conflicts again reflected both the transitional nature of medical understanding of health and disease of the time and classic aspects of blame and foreign responsibility. The Irish were the popular object of blame in both Portsmouth and Norfolk. In their unpopularity, they reflected the mid-nineteenth century experience of other Irish immigrants in American port cities. Fleeing wretched conditions in Ireland (Percival, 1995), they found themselves largely unwelcome strangers in their new land, even the victims of arson and riots (Anbinder, 2001, pp. 29-32). With them, they brought their religion leading to an expansion of the Roman Catholic church in America and bringing on themselves even more prejudice (Nelson, 2001, p. 34-5). As a virgin population, they were naturally highly susceptible to the yellow fever virus. But such susceptibility brought blame rather than empathy. Intemperance, imprudent eating, living in filthy hovels, exposing themselves to dampness and rain brought yellow fever on them and threatened the rest of the community as well (Carrigan, 1994, pp. 239-45). After the 1822 epidemic, New Orleans, a city both cosmopolitan and Catholic, offered financial aid to indigent strangers—largely Irish and German—who were willing to depart the city (Carrigan, 1994, p.45). In short, absent any fundamental understanding of the true cause of the epidemic, the argument about local versus foreign origin thrived. It is important to note that the positions taken, even if not politically driven, had political implications. Arguments concerning the foreign origin of disease have persistently been used as an argument for limiting immigration while those of local origin support activist, more intrusive public health programs. Pernick (1997, pp.

26 It is estimated that, to prevent a yellow fever epidemic, at least 80 percent of a population must be immune (www.who.int/inf-fs/en/fact100html).

27 In fairness, the Irish were not the only immigrant groups accused of these behaviors. But the massive emigration from their homeland meant that there were large numbers of them in American port cities, making them easy targets.
writing about the great yellow fever epidemic in Philadelphia in 1793, correlated opinions concerning the etiology of the epidemic with party affiliations. Local Federalist leaders saw the disease as a foreign import while Republicans assigned the cause to local conditions. Thomas Jefferson, who was present in Philadelphia at the beginning of the outbreak blamed the nature of cities themselves and framed the epidemic in terms of the good it would do in the realization of his dream of America as an agrarian paradise.

When great evils happen, I am in the habit of looking out for what good may arise from them as consolations to us, and Providence has in fact so established the order of things, as that most evils are means of producing some good. The yellow fever will discourage the growth of great cities in our nation, & I view great cities as pestilential to the morals, the health, and the liberties of man. True, they nourish some of the elegant arts, but the useful ones can thrive elsewhere, and less perfection in the others, with more health, virtue & freedom would be my choice (Jefferson to Rush, 23 September 1800 in P. L. Ford (Ed.). The Writings of Thomas Jefferson, cited in Stickle, p. 282).

On the other extreme, attributing epidemics to local causes was seen by some as a form of treason (Pernick, p. 125). Like Portsmouth a half a century later, Philadelphia “solved” its epidemic problem by taking actions that addressed the possibility of both local and foreign origin.

There was, however, a “cause” that, while more difficult to address, continually arose with regard to epidemics—that of divine responsibility and intervention. In the west, moralists from Moses to Pat Robertson have seen civic calamity as a means of purification or as punishment for sinful acts. Karlen (p. 66) has argued that one particular religion benefitted from epidemic disease. “...plagues paid dividends to Christianity. The new faith, with its contempt for comfort and for life in this world, and its hope of resurrection in a better one, profited from infections that scourged the Roman world from the second century A.D. on.” Yellow fever was problematic in this regard since it was clearly often not confined to the poor (considered to be blameworthy because of their “idleness and

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intemperance") and since people of color (rather than the dominant white population) suffered least from its effects28 (Swenson, 1988, p. 188). Still, evidence often counts for little in the face of the human capacity for denial. In her work on the frequent appearances of yellow fever in New Orleans, Carrigan (1994) recounts how the newspapers ignored all but the most severe outbreaks. In 1837, for example, deaths had reached 75-100 per day when the papers broke their silence. In fact, the opposite was the case. As she states, “The worse the epidemics became, the more loudly editors, physicians, and others protested that New Orleans was the healthiest city in the Union—except during occasional epidemic years.” Physicians noted that the fever was not contagious, but was produced by the summer heat. It was an ordinary summer ailment that “became a fatal disorder in certain individuals and groups because of their imprudent or intemperate ‘mode of living’ or by an excess of fear that literally scared them to death” (Carrigan, 1994, p. 37).

As we will see, the imprint of the epidemic can readily be noted in the minutes of the Portsmouth Common Council meetings during the years immediately following the epidemic. A number of measures were enacted in an effort to prevent a recurrence. In substance, they echoed the pre-epidemic measures concerning themselves mainly with public cleanliness, but were applied more intensively. The measures reflected the best sanitarian principles of the time (see below) and addressed the problems identified by the American Medical Association’s report on 11 American cities. These problems included poor drainage, inadequate street cleaning, impure water, inadequate ventilation, nuisances (e.g., manufacturing waste), and inadequate use of disinfectants as basic causes of disease (First Report of the Committee on Public Hygiene of the American Medical Association, 1849).29 In these activities, they were not unlike certain other cities that had faced yellow

28 This cleavage in thought that separated the epidemic experience of the poor from that of wealthier classes was not new. A citizen of Toulouse thanked God in 1561 that “The contagion only ever hits the poor people...God by his grace will have it so.” But apparently God was assisted by the fact that “The rich protect themselves against it.” (Kamen’s The Iron Century: Social Change in Europe 1550-1660) cited in Anderson and Zinsser, 1988, p. 382). However, in major epidemics, even the nobility fled (Anderson and Zinsser, p. 382).

29 It should be remembered that the American Medical Association was, at this time, a fledgling and rather weak body, and it is not clear how much credence the report was given. The
fever. In their investigations of epidemics from 1790-1825, physicians in New York City had identified poor, waterfront neighborhoods as the “ground center of the calamity” (J. Ford. Slums and Housing, with Special Reference to New York City as cited in Blackmar, 1995, pp. 44-6). New York, too, extended the common law concept of “nuisance” into land use by government, e.g., by filling in lots or cleaning out refuse, and, most important, hiring an inspector to enforce public health regulations (Blackmar, p. 45). New York, it should be noted, had been granted authority by the state legislature to pass its own health laws following a major yellow fever epidemic in 1798. The 19th century in the city saw the development of a permanent public health establishment combining both medical and police functions (Rowen, 1993, pp. 210-1).

Indeed the combination of medical and enforcement functions is one of the classic conundrums of public health in free societies. Public health regulations are nothing if not intrusive. They prescribe how lives are to be lived (children must be immunized), how businesses are to be conducted (food-handling restrictions), how products may be manufactured (OSHA regulations), and, in time of epidemic, who may or may not leave the area—often who may live and who may die. They are virtually always at odds with bottom-line business practices. For these reasons, populations tend to be most willing to pass and obey public health laws in times of a perceived threat and most willing to declare their freedom from such practices in times of greater comfort.

The Portsmouth epidemic occurred not only in a transitional period between dominant medical paradigms, but also at a time when public health methods were also being transformed. Chadwick had published his landmark study, Report on the sanitary condition of the labouring population of Great Britain, only 13 years previously. This report offered evidence to demonstrate that disease was caused by “filthy environmental conditions, polluted water supplies, and the decaying garbage and wastes clogging the streets” (Rosen, 1958/1993, p. xxvi). But the title of the work indicates an underlying approach to public health that concerned itself with human capital. Disease was a drain on report itself is a remarkable mix of science and moralizing. It does, however, demonstrate the growing interest in statistics as a basis for public health administration.
the ability of a society to produce. Clearly, mid-nineteenth century Great Britain was farther along the path of the industrial revolution than a small town in the American south, but human capital arguments for epidemic prevention provided an economic foundation for action that served as a buttress for compassionate concerns.

Public acceptance of the 19th century death rate from infectious disease, particularly among children, is a source of amazement to later observers. Duffy (1971) suggests that common diseases occasioning high mortality became familiar, a sort of “background” to ordinary life and therefore caused little concern. Epidemic diseases, however, inspired fear because they were unfamiliar. Foege (1991, pp. 12-4) notes this phenomenon also, adding that people perceive risks as greater when they lack a sense of control over events. Blaming others for the disease is one way to explain an epidemic and thereby restore a sense of control (Nelkin and Gilman, 1991, p. 40). Blame can be placed on ethnic or racial groups, social classes, those who behave outside established social norms, those who are perceived as a threat, or on God’s will. Douglas (Purity and Danger cited by Nelkin and Gilman, p. 41) notes that “Blame is in effect a social construct, a reflection of the worldviews, social stereotypes, and political biases that prevail at a given time.” Locating blame not only establishes a sense of control, but also speaks to other social prejudices—the need to set boundaries from the “others” and, since illness is so often associated with poverty, of justification of social inequities (Nelkin and Gilman, p. 41). In a similar way, the insistence on yellow fever as a “strangers’” disease established regional boundaries.

The analysis of the fear of epidemics in terms of social disintegration and alien threats certainly has merit, but the affected populations fully realized that epidemic diseases truly threatened their societies in a way that endemic illnesses, even those with very high mortality rates, generally did not. Of course, epidemic diseases also claimed lives at a much faster rate. A yellow fever epidemic could claim 250 lives a day (Carrigan.

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30 Epidemics, though “unfamiliar”, were apparently not uncommon in 19th century America. With no reporting requirements and no central data repository, their exact frequency is unknown. A compendium of 19th century American epidemics can be found in Appendix 1.

And, because of their firestorm-like progression, epidemic diseases could and often did cause civic breakdowns which, in themselves, could be fatal to large populations. As Trask (1997) notes, yellow fever halted normal commerce and deprived residents of even ordinary services. Fear on the part of outsiders isolates epidemic areas and those with the resources for flight leave taking their skills with them. As we will see, conditions of scarcity prevailed in Portsmouth during the epidemic. Many who survived the disease may well have starved to death without the intervention of the Relief Association.

At base, reactions to the epidemic reflected the theoretical underpinnings typical of 19th century medicine. Diseases were not well demarcated as specific entities. In fact, the body itself was not well demarcated from its environment. A constant interplay between the two lay at the base of health and disease. The balanced maintenance of “intake and outgo” in the forms of diet and excretion were crucial to the health of the individual, thus the careful attention to the effects of drugs on secretions and excretions. Drugs, in fact, were not categorized by use in certain disease, but by their physiological effects. One reason for the popularity of mercury as a treatment was its unequivocal relationship of dose and effect on salivation (Rosenberg, 1985, pp. 40-3). In current terms, the effectiveness of a drug was not measured by its ability to cure, but by its ability to exhibit an effect on the body. In fact, the term for administering a drug was to “exhibit” it (Rosenberg, 1985, p. 43). And within the body, a similar balance among its components (including the mind) were also necessary (Rosenberg, 1985, pp. 40). The source thought to be responsible for an outbreak was equally indefinite. Rosenberg (1992, pp. 295-6) cites three major concepts thought to be at fault. First, the always-precarious balance between the body and the environment may become deranged (configuration). There could be a source of contamination from the outside. Lastly, there was the matter of predisposition or susceptibility – the question of why some became sick while others, apparently with the same exposure, remained well. In great part, susceptibility was thought to be explained by the influences of humors. Humoral theory is ancient, and reduces the persona to an amalgam of influences based on body fluids. Alterations in
yellow and black bile, blood and phlegm affected the personality and interacted with the environment to produce healthy and diseased states. Humoral theory extended far beyond individual biology. Each humor (secretion) is associated with a type of “prime matter” (air, earth, fire, water), with seasons of the year, and with astrological phenomena (Haller, 1981, pp. 4-35). In all, humoral theory presented physicians with the intellectual challenge of correlating signs, symptoms, personality, climate, and planetary influences in the process of diagnosis and treatment. It also buttressed the notion that physicians must know the person and his/her situation very well, preferably over a lengthy period of time, in order to treat each illness successfully.

In the absence of effective medical treatments for most conditions, much of 19th century medicine was domestic, medicine practiced in the home by family members using methods and materials that were widely available. This blurring of distinctions between home remedies and those offered by physicians meant that physicians’ remedies could also be used by non-physicians. In August of the epidemic year, The Virginia Gazette took note of the prevalence of yellow fever and offered the following remedies taken from a medical text.

A soon as the symptoms of the fever appear such as headache, nausea, drowsiness, pain in the limbs, back, etc., an emetic should be immediately administered, (this emetic is composed of one part pulverized ipecac, one part pulverized lobelia, and half a part of pulverized blood root; dose fifteen grains and repeat after a quarter of an hour if not successful, making the patient drink plentifully of warm camomile tea; fifteen grains of simple ipecac, may be substituted if the first deemed too powerful; followed as soon as practicable, (say in four to six hours,) by an active purge; this is composed of two parts Alaxandria [sic] senna pulverized, and one part of powdered cloves, dose one drachm, or a small teaspoonful, on which pour half a gill of boiling water, sweeten and left to coll, soaking the feet frequently in hot ley [sic] or mustard water. If relief be not speedy, and the blood tends to the head or bowels, causing internal heat of irritation, pain or oppression in the stomach, with coolness or unequal circulation in the extremities, there is a danger
of congestion, and recourse must be had at once to mustard poultices, (make those with good, strong, fresh mustard and vinegar, mixing a little fine meal or flour, and when spread, put on a thin layer of pounded garlic,) commencing on the inside of the legs at both ankles [sic], and removing them upwards as the burning becomes insupportable, to the calves, then to the thighs, wrists, middle and upper parts of the arms and, should there be pain in the head, to the temples, behind the ears and back of the neck, bathing the head (keeping it wet) with diluted camphorated spirits, or rum and water, (the best application is equal parts of New England rum, rain water and vinegar, with the addition of a little salt.)—During these applications, acidulated mucilagenour [sic] drinks should be freely given, and cooling applications, (where there is pain) and cloths etc., applied to the bowels.

This passage not only demonstrates the complex rituals common to many practitioners of the time, but its publication in the press assumes the knowledge and ability of patients’ families to follow the same rituals on their own. Shipboard manuals recommended similar treatments (Folsom’s The Mariner’s Medical Guide Designed for Use of Ships, Families, and Plantations cited by Trask).

The Sanitarian Movement

The nineteenth century sanitarian movement, the precursor to modern public health, was an accompaniment to the rise of an urban industrial society (Ellis, 1992, p. 1). Largely following the British experience of the urban poverty and overcrowding occasioned by the industrial revolution, those concerned with public health in America began studying conditions in their own cities. The results were discouraging (Ellis, pp.2-7). While local boards of health came (usually under the threat of an epidemic) and disappeared (when the threat dissipated), public health reformers consistently pointed out the need for permanent agencies with real powers to implement sanitary reforms (Ellis, p. 9).

Sanitarian theory depended largely on the belief in miasmas as the basis of epidemic disease. Miasmas, literally “bad air” were an etiology of considerable pedigree.
The theory was based on the notion that an environmental process, namely putrefaction, was at the root of disease. On a larger scale, it echoed the medical belief at the time that people and the environment were interdependent and that disease was a result of a disharmony in this interaction (Alewitz, 1989). Like the attention paid to physical symptomatology in individual cases, this theory looked at the considerable “filth” in urban environments and declared it to be evil. Certainly, they had plenty to look at. Effective trash and garbage collections and sanitary systems were not a feature of 19th century American cities. The waste of animals used for transportation added to the waste on the streets. Runoffs from such industries as abattoirs often found their way directly to the streets (First Report of the Committee on Public Hygiene of the American Medical Association, 1849). A committee in Charleston investigating the yellow fever epidemic of 1858 described the condition of the city.

Occupants of lots place the offal, garbage, and particularly the filth of cowyards openly in the streets...Another and greater evil [resulted from] houses crowded, or rather packed, with human beings, and the yards or lots of small dimensions [cluttered with all kinds of things] and in some instances hogs and dogs. [The filth and refuse were then put outside] with the morning sun beating down on it and disengaging the foeted [sic] emanations from streets, alleyways and courts, the poisonous gases of putrifying animals and vegetable matter passing into the atmosphere to the injury of every section of the city, and all classes of society. (Report of the Committee of the City Council of Charleston, upon the Epidemic of Yellow Fever of 1858 cited in Wade (1964, pp. 136-7)

Not uncommonly, swine and dogs were relied upon to rid streets of waste products by consuming them. The “bad air” given off by all this putrefying matter was thought to contain unknown substances which poisoned the environment and caused disease by an interaction with susceptible individuals. But the effluvia of decaying matter did not always result in epidemics. Clearly, at least one other factor must be at work. One of these was the epidemic constitution of the atmosphere. Heat, dampness, even astronomical forces
were thought to interact with the atmosphere to cause epidemic disease. Dr. Benjamin Rush and Noah Webster, theorizing on the 1793 yellow fever epidemic in Philadelphia, discounted theories of contagion and importation and pointed to the interaction of decaying animal and vegetable matter with heat and moisture as the cause. (Rush incidentally noted the presence of a great number of mosquitoes.) This interpretation influenced medical thought for the next seven decades (Carrigan, 1994, pp. 208-9). It was this theory that gave rise to the considerable speculation with regard to the role of the weather in the epidemic. In addition to ruminations on the heat and drought, some looked at the "electrical tension" of the atmosphere as manifested in lightning storms and low barometer readings as causative (Forrest, 1857, pp. 303-5).

Contagion was a different matter. If a disease was thought to be contagious, it was believed that some sort of poisonous matter could be passed from infected persons (or their belongings such as infected bedding) to susceptible individuals to cause disease. Obviously, the receptivity of other locales to refugees from an epidemic area was conditioned by whichever theory of transmission was accepted. If refugees were simply fleeing conditions of bad air, it was safe to accept them. But if the disease was transmissible by contagion, clearly the refugees brought peril with them. Theories of bad air and poisons gave rise to practices of wearing camphor or spice bags near the nose or the firing of cannon and burning of torches (to break up the bad air).

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31 The Report of the Portsmouth Relief Association devoted a number of pages to describing areas in the town that were wet-marshes, wharves—as well as detailed charts of the temperature and wind conditions that summer and comparisons to climatic conditions thought to have led to previous outbreaks in a number of cities.

32 The notion that weather conditions affect disease is at least as old as Hippocrates. The ancient physician begins his treatise "Airs, Waters and Places" with this instruction. "Whoever wishes to pursue properly the science of medicine must proceed thus. First he ought to consider what effects each season of the year can produce; for the seasons are not at all alike, but differ widely both in themselves and at their changes. The next point is the hot wind and the cold, especially those that are universal, but also those that are peculiar to each region" (Hippocrates, p. 71).
during times of epidemic (Trask, 1996).\textsuperscript{33}

The miasma theory was often conflated with ideas of disease as the result of immoral behavior at least since medieval times. The combination of theories offered a plausible explanation of why some were more susceptible to the influence of bad air than others (Slack, 1991, p. 116). “Bad air” was associated with the smells common in poor neighborhoods (Nelkin and Gilman, 1991, pp. 44-5). The poor in the popular mind were associated with sinful behavior. Associating disease with immoral behavior reinforces socially defined boundaries and often associates disease with a notion of divine retribution. Early public-health reformers in America reinforced the connection between health and piety (Nelkin and Gilman, 1991, pp. 44-8). Lifestyle, e.g., the Irish custom of keeping domestic animals in their homes, was also seen as a cause of disease (Nelkin and Gilman, 1991, pp. 44-8;). Historically, measures to prevent plagues (e.g., limitations on movement, incarceration) also served as measures of social control of poor populations (Slack, pp. 125-6).

**Yellow Fever North and South**

Yellow fever epidemics were not an uncommon phenomenon in the American south of the time under study. In one instance, Stickle (1979) reports on a yellow fever epidemic in Baltimore, August-October, 1800 and argues that the poor of the city were disproportionately affected. As in Portsmouth, the index cases occurred close to the water (in Fell’s Point) and news of the sickness was not released by the city authorities (in this case, the Board of Health) until several deaths had occurred. As soon as the news was made public, scores of businesses announced closings and relocations. Unlike the later Portsmouth/Norfolk epidemic, the city government continued functioning. Daily death statistics were compiled and released by the Board of Health (although only two

\textsuperscript{33} There was a third, less common, theory as to the origin of yellow fever—that it originated aboard ships. According to this belief, improved ship ventilation and hygiene would prevent the disease. Even when this theory was not accepted, few denied the inescapable connection between yellow fever and shipping (Hargis, *Yellow Fever: Its Ship Origin* cited by Trask, 1997).
members of the Board actually remained in the city). The city also set up a temporary hospital. However, after the epidemic, the city’s efforts were widely believed to be inadequate and there were pressures to replace the Board of Health and set up a dispensary for the poor. Stickle has carefully documented the disproportionate loss of life in Fell’s Point, the poorest section of the city. However, it is not clear whether this was due to increased susceptibility of a poor population, the flight of the middle class, or the documented mosquito-friendly conditions of the Fell’s Point locale.

Carrigan (1988) argues that yellow fever (“the Scourge of the South) – or disease in general--was a significant component in southern distinctiveness or “otherness.” She maintains that yellow fever was a major factor in limiting population and economic growth. She cites the negative consequences of more than a century of epidemics—“the disruption of trade, and its diversion to other areas; delay of commerce associated with the harvest; and the consumption of energy and resources in the care of the sick, burial of the dead, provision for orphans, and relief for the families of the unemployed” (Carrigan, pp. 69-70). Humphreys (1992, p. 49) agrees and notes estimates of $10.5 million annual losses by New Orleans from yellow fever between 1846 and 1851 alone.

Yellow fever, as well as other southern epidemic diseases, drove southern physicians to emphasize their regional difference in medical experience. In the 18th and 19th centuries, a number of works appeared describing the medical conditions thought to be peculiar to the American south (Breedon, 1988, p.9). At the fringes, theories of southern medicine tended toward the extreme. A New Orleans physicians argued that the practice of medicine had begun in the southern climate of Greece only to have been corrupted by barbarian invaders from northern Europe. Physicians in the American south were advised to return to medicine as it had originally been practiced (Young, 1988, p. 160). In some ways, the diseases of the south also defined the meaning of being southern. It was thought that a period of “seasoning” was necessary to develop resistance to the diseases of the south (Breedon, 1988, p. 9). Survivors of the seasoning experience had, in
a way, proved their fitness for the southern climate.\textsuperscript{34}

Southern diseases also sparked an interest in southern medical independence. It was important to have southern medical schools, southern medical journals, experience with southern populations (Carrigan, 1988, p. 62).\textsuperscript{35} In fact, a number of medical schools (including those at the University of Virginia and in Richmond) were opened in the south during the first half of the 19\textsuperscript{th} century. They offered the standard four to five months of lectures with a preceptorship. During the same period, southern medical journals were published in New Orleans, Charleston, Nashville, Richmond and Savannah. (For a brief time, the Confederacy published its own medical journal – Shryock, 1930).

According to Warner (1985, pp. 53-8), antebellum southern physicians argued that the south had a distinct medical character and, therefore, required a different kind of medical practice. This distinctiveness was based on geographic patterns of disease distribution, virulence, and classification; the large population of blacks and relatively small proportion of recent European immigrants in the South; and regional peculiarities in climate, topography, and diet... (Warner, 1985, p. 53).

In particular, the region’s hot weather combined with its marshes and wetlands were thought to give rise to “noxious miasmata”, the bad air that gave rise to disease. These unhealthy conditions necessitated larger doses of medications than would be given in the north. Bleeding, however, was thought to be less effective in the presence of southern diseases and was practiced less than in the north. It is important to note, however, that

\textsuperscript{34} The Report of the Portsmouth Relief Association stresses that “new comers” to the region, especially “foreigners” were not only more likely to contract the disease, “but also to have it in its most malignant form” (p. 126). Their views were even more local, implying that even birth elsewhere in Virginia (rather than Portsmouth) afforded a lesser degree of protection. Note also the belief that yellow fever was changeable in form.

\textsuperscript{35} The notion of southern medical distinctiveness is part of a much larger cultural understanding of the south as a place apart, outside the norm of the American experience (Breedon, 1988).
the drugs used by physicians were the same and that basic principles of anatomy and physiology were thought to be the same regardless of region. It was the application of these principles that were thought to necessitate a different style of practice.

The source of these arguments were to be found not only in southern tendencies to view themselves as different from northerners in multiple spheres (e.g., agriculture), but also from the basic understanding of the place of climate in the etiology of disease prevalent at the time. The thought that disease was environment-specific had a 2000 year old pedigree, dating from Hippocrates' *On airs, waters, and places*. The constitution of the patient interacted with the patient’s environment to produce a plethora of presentations of the same disease. Climate loomed large as an environmental factor affecting the presentation of disease.\(^3\)\(^6\) American medical practice therefore was required to differ from European practice, and southern practices must be different from those of the north. A Tennessee physician made the case in 1860.

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\text{Medicine, like disease, must spring from the very elements, soil, sunshine, moisture, etc., that produce disease. The very circumstances that develop the one, contains, and suggest also, the antidote. The study and cure of disease in one locality does not necessarily give the information requisite to success in another locality...Again, we have a population here that book-makers in the north know absolutely nothing about–a people widely different from the race with which they are familiar, and of whose diseases they are no more competent to write than to give a history of the inhabitants of the moon. A southern medical literature is the desideratum–a literature that can be relied upon–a literature drawn from demonstrations in a southern field, whose fauna and flora are different, having different botanical and zoological provinces–whose geology is different–whose heat and moisture are different in degrees and whose genus homo is different in dynamical force, and whose diseases are modified or rendered virulent by these}
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\(^3\)\(^6\) Most early American medical societies appointed committees to study the role of weather in disease. (Duffy, 1992, p. 67)
many differences, all of which have to be studied in their natural relations (Warner and Tighe, 2001, p. 107).

However, this same theoretical grounding in the relationship between climate and disease did not bring about calls from northern physicians for a “northern” medical practice style, although there were some northerners who publicly maintained that “southern” medicine was inferior. To Warner (pp. 61-5), the zeal with which southern physicians called for a distinctive style of practice “must be ascribed to the same engines that drove southerners from a variety of occupations in their rising defense of the southern way of life.” It demonstrated southern physicians’ anxieties concerning both their low economic and social status—problems that, in fact, were endemic to most American medical practice at the time. In the south, these anxieties drove the creation of a southern revisionist medical history in which “true” medicine was a product of a southern climate (Greece and Rome) that had undergone perversion by dominant northern European influences. It became then the task of the southern physician to reject the corrupted version of practice and re-institute “true” medicine.

The view from the north, however, was different. While there was no call for a “northern” practice of medicine, northerners did view the south as different medically. Basically, they viewed it as dangerous. Southern mortality was clearly the highest in the nation. New Orleans, known as the “graveyard of the Southwest” had a death rate three times that of New York or Philadelphia (Breedon, p. 10). Northern insurance companies charged their southern policyholders higher premiums (Breedon). Disease, especially malaria which saps the strength of the victim, contributed to the belief in the “lazy southerner” (Breedon, p. 11). Lazy or not, the high rates of disease constituted a drain on the southern economy. It was estimated that its high rates of illness was costing the city of New Orleans $45 million annually by the 1850s (Shryock, 1930). In the 1840s, it was estimated that 85-94 of 100 babies born in selected northern states would be alive at the end of 5 years, but only 73-80 of their southern counterparts (Shryock, 1930). Even though a number of them waited out the summer disease season in northern locales, southerners typically reacted defensively to northern ideas of the south as sickly place,
thereby strengthening their own belief in regional distinctiveness (Shyrock, 1930; Breedon, p. 11). In rejecting northern theories of the south as a sick region, some southern physicians began employing the most basic methodology in public health to prove their case. They began counting births and deaths and calling for the establishment of vital records registries (Humphreys, 1992, pp. 50-1).

Discussion

The examination of an epidemic experience provides unique insights into the biological and social forces that meet at the intersection point of the outbreak. The very occurrence of the epidemic signifies that human environmental intrusions have met resistance from the natural world. The epidemic represents a renegotiation of the terms of accommodation between people and pathogens. Social and cultural beliefs of the society are illuminated as the community struggles to survive. Urbanization, racism, xenophobia, and regionalism were among the phenomena that were focused and displayed during antebellum American epidemics.

The Portsmouth epidemic experience demonstrates the conflicts inherent in the violent convergence between urbanized populations and natural pathogens. With the increase in its virgin population (as well as that of Norfolk across the water) and with commercial traffic from infected areas regularly arriving in the port, it was perhaps only a question of when rather than if such an epidemic would occur. As its inhabitants can testify, Hampton Roads is a mosquito-rich area. When a substantial dose of the yellow fever virus arrived in the port, the three conditions necessary for an epidemic—a virgin population and the presence of both the pathogen and the vector needed for its spread were present. Those infected suffered a predictable and most unpleasant course. For most survivors, the experience resembled a particularly severe case of the flu. Those who died suffered multi-systems failure.

The epidemic experience emphasized a number of characteristics of antebellum southern society. As the black and white experience was different in health, so was it different in disease. And so was the difference utilized by white writers to justify the institution of slavery. The epidemic and its aftermath was met with the best efforts of both
medicine and public health of the time. The former, informed by a variety of medical models, demonstrated a dizzying array of remedies. The latter, vacillating between theories of domestic contagion and foreign importation, prescribed a combination of isolation and sanitation. And the epidemic of a disease now absent in northern cities manifested the regionalism of the times.

This study is the first to examine the epidemic as it occurred in Portsmouth. It utilizes primary sources to depict the experience as it occurred, describes the causes and clinical course of the yellow fever, and provides a broad background of social and medical conditions of the time that were exemplified in the Portsmouth story. In particular, it focuses on the organization that replaced the government and aided in the survival of the town’s inhabitants. The organization is examined in terms of systems theory as elucidated by Anderson and Carter. The theory argues that human society is comprised of components that are related both to each other and to the society as a whole. In the Portsmouth case, one component, an organization, arose to replace another as the governing authority. In addition to replacing another organization, it managed the maintain the essential society as a whole even as other components (e.g., the family, the church) failed.
METHODS

Public health is both an old and a new discipline. It was born in the efforts to contain periodic plagues and continues both in that tradition as well as in modern efforts to prevent chronic conditions. The history of the discipline may extend to Biblical reports of disease outbreaks, but probably the best known report is that of the plague of Athens recounted by Thucydides (Thucydides, trans. 1954/1972). Thucydides carefully described the clinical manifestations of the disease that devastated Athens in 430 B.C.E. as well as the social effects on the population. So compelling is his account that it serves as a paradigm for all later reports of epidemic diseases. Quite naturally, more attention has been paid by health officials to the biological causes and effects of epidemics rather than to their social consequences. That may have been Thucydides' own intention since he stated he was writing his account so that the disease might be recognized in the future. However, his description of the social chaos occasioned by the plague of Athens provides a singular insight into the disintegration of systems of community control under overwhelming biological stress. Indeed, it gives us an object lesson in just how fragile those systems are.

The yellow fever epidemic which struck Portsmouth in 1855 similarly disintegrated existing social systems. However, in this case, an alternative system was quickly assembled to cope with the emergency. In some instances, the new system was created out of the remnants of previous institutions. Some clergy, for example continued to visit and conduct services. The dominant part of the new system, the Portsmouth Relief Association, was newly founded. Although suffering was great, the general state of indulgence and lawlessness described by Thucydides was largely avoided.

The relative success of the cities in adapting their social systems to the needs of the epidemic was examined in terms of the framework set forth by Anderson and Carter (1999) in their description of the application of systems theory to communities. In particular, they have elucidated elements of the theory which provide a structure for examining the epidemic from a systems perspective. These include, but are not limited to:

- Energy and information exchange,
• Structural and behavioral aspects of social systems, and
• Characteristics of specific system components (communities, organizations, groups and families).

Data sufficient to illuminate the event were drawn from diverse sources. Numerous works concerning general history of the time for Portsmouth, and the state of Virginia were consulted. Standard medical sources for the study of tropical disease were used to develop a picture of the clinical presentation and the epidemiology of yellow fever. However, care was taken to ensure that present knowledge did not contaminate the view of the biology of the epidemic as seen by both medical experts and the population affected at the time. For those views, secondary and primary sources dealing with 19th century medical knowledge and contemporary accounts were consulted. (Primary sources are those written at or about the time of the epidemic. Secondary sources are those written at a later date.)

Diverse primary sources concerning the cities and the event were utilized, most notably:

• newspapers of the period,
• family papers as available,
• 1850 census and mortality data,
• survivor accounts,
• church records,
• reports of the local association that functioned as a quasi-government during the epidemic,
• report of the Philadelphians who sent both people and goods to Portsmouth to aid in the epidemic, and
• Portsmouth Common Council minutes.

The theoretical framework was developed in greater depth by the use of relevant texts.

The first analysis consisted of setting up background to the epidemic, that is,
developing a general portrayal of what the town was like prior to the epidemic. For this, standard sources (e.g., census data, maps, historical monographs) served as data sources. The second analytic task was piecing together the story of what happened, i.e., the construction of an accurate chronology of events, to "flesh out" the events in human terms, i.e., to address what it would have been like to be in the cities during this period, and to place the experience within the framework of medical understanding of the time as well as what we know about yellow fever in 2005. Contemporary news reports, survivor accounts and medical history monographs served as the main data sources for this part of the work. The event was then examined as a historical phenomenon with the major analytic task being the examination of events in terms of systems theory as set forth by Anderson and Carter. The focus of the work was the dissolution and formation of the governing organization of the town. As the analysis proceeded, additional development of issues concerning the nature of yellow fever, its vector (the mosquito), the place of yellow fever in the development of the American South, and broad concepts of nature of epidemics and their social effects were undertaken.

In the beginning, an initial list of data sources and their locations were assembled. These included, for example, Portsmouth Common Council meeting minutes and relevant holdings of the Perry Library at Old Dominion University. Numerous additional library resources have been identified. Most were held by the Norfolk Public Library, the Portsmouth Public Library, and the State Library of Virginia. I should add that it was not only the materials that were helpful, but also the librarians. For example the archivists at both the Norfolk and Portsmouth libraries are long term residents of Hampton Roads and have generously shared the benefits of their extensive local experience. The archivist at the Perry Library kindly passed on to me a paper he had written concerning Norfolk politics of the time. As far as books are concerned, in addition to library sources, a number of volumes were located via the Internet. Other Internet sites (e.g., Medline) were also consulted for additional materials.

As expected, the number of possible sources tended to snowball as the research proceeded. Yellow fever, now long forgotten, was an integral part of American history,
and writings concerning it are abundant. A serious effort was made to examine every appropriate source. However, because of the abundance of potential sources, some works were excluded. Criteria for selection were directed to which sources contributed most to developing the Portsmouth story and relating it to the larger history of medicine at the time and to the examination of this epidemic in light of systems theory with particular emphasis on the nature of organizations. I might add that the role of serendipity in research cannot be overestimated. Colleagues have pointed me to experts they “happened to know” and the day I stumbled on a first person account of the epidemic on the Internet was truly glorious.

Data collection was performed the old fashioned way—usually by extensive note-taking. Some simple collection instruments (e.g., to collate 19th century causes of death) were devised. Whenever possible, copies of relevant materials were made and added to subject files. Initial research efforts were directed at establishing a societal picture of the town of Portsmouth. These included, for the most part, analyzing the numerical data available (e.g., census and mortality data), reviewing primary documents (e.g., Common Council meeting minutes), and examining standard sources on Virginia and local history. The progress of the epidemic was tracked mainly through primary sources—contemporary survivor accounts, newspaper reports, and reports of various groups that dealt with the emergency. Common Council meeting minutes and newspaper accounts were especially useful again to demonstrate how the societies were re-knit as the epidemic became a memory.

Insofar as possible, a first pass at data analysis was made as the data were collected. As readings were undertaken, a running list of concepts to be explored was assembled. This list served as part of a feedback loop between research in progress and work on the document itself. The concepts list changed as more data were collected.

Historical research is, by definition, dependent on the work of others. Documents, whether government surveys, diaries, newspapers, or meeting minutes are as accurate as the recorder. Furthermore, questions of bias both of the recorder and the historian are ever-present. As to accuracy, the attempt was made wherever possible to “triangulate”
findings, i.e., to verify information from more than one source. The numbers of deaths, for example, were estimated both by the physicians who treated the victims and could be verified against lists compiled by the organizations who buried the dead.

It is always somewhat of a shock to recognize the biases of those who wrote the primary sources consulted. It is even more of a shock to confront your own. Three major issues which elucidated the differences in points of view between the writers of the primary (and some of the secondary) source documents and the writer of this work arose repeatedly during the course of the research. First was the question of civic responsibility. It seems shocking to a 21st century observer that an entire government would not only simply desert its citizens in a time of crisis, but would be welcomed back by those same citizens once the crisis was over. Second was the pervasive “we know better now” thoughts that rattle through the mind of a modern health professional when confronted with 19th century medical theory and practice. Mid 19th century American medicine is particularly problematic since it existed in the lacuna between the general abandonment of “heroic” methods and the adoption of the methodologies of “scientific” medicine. (See review of the literature.) Most disturbing, however, was the radical divide between the time under study and the present with regard to issues of race. As a white American, born and educated in New York, my acquaintance with the realities of what it meant to be black and living in antebellum Virginia was cursory to say the least. Indeed, one of the first puzzles I encountered in my initial research brought me up short. Why did different reports contain wildly different death rates? Turning to lessons learned in Public Health 101, the denominators were examined and it was seen that people were simply being counted differently. Blacks did not figure in the same lists as whites and free blacks were not found in the same documents as enslaved blacks.

In general, in these issues, as well as others, every effort was made to let voices from the past speak for themselves, and, after all, sometimes, the past is more like the present than we like to believe. Those living with AIDS have learned about government denial of responsibility, and there is still no specific treatment for yellow fever. However, with regard to issues of race (and to some extent gender and ethnicity), the writer has
made specific efforts to present a counterweight to the accounts of the dominant class of the time which was largely white, Protestant and male.\textsuperscript{37}

In addition to issues of bias, some errors may be present simply due to the functional difficulties in dealing with old documents. Most problematic were the 1850 census figures, photographed from microfiche, and often exceedingly difficult to discern. Although efforts were made to eliminate systematic errors, it is quite possible that another examiner might come up with different figures.

\textsuperscript{37} Traditional Western historians have tended to see history in terms of war, politics and economics–areas of white male dominance. Beginning in the 1960s, the increasing numbers of minority and female historians in history graduate programs turned their attention to social history emphasizing those groups who had been overlooked by earlier generations of historians. This dissertation follows their lead.

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BACKGROUND AND COURSE OF THE EPIDEMIC

In the mid-nineteenth century, the town of Portsmouth and its neighboring city of Norfolk were about to be struck by two cataclysmic events. The second of these, the Civil War, would come soon enough. The first, the yellow fever epidemic of 1855, may have served as a portent of civil crises. The epidemic experience in Portsmouth is the subject of this work.

A catastrophe is shaped not only by its own nature, but also by the substrate on which it acts. Many filaments of events and ideas had woven themselves into the civil life of the two cities prior to the epidemic. The disease event tore the fabric of the region apart and re-wove it in a different texture. American towns and cities exist as population foci within their individual states and are significantly affected by the forces that shape the states themselves. Following Dabney (1971), we will briefly examine the general sweep of the events shaping the state before taking a closer look at Portsmouth itself.

Virginia Background

It was December of 1606 when three ships carrying over 100 men set sail from London for the New World. From the first, things did not go well. Halley's Comet, considered to be an evil omen, lighted the sky as the ships prepared to sail. Winter storms tossed the vessels about, and it was six weeks before they were able to leave the English coast (Dabney, p. 2). Many wished to turn back even before setting out on the Atlantic, but were persuaded by a minister aboard to press on. The expedition sailed into open water in mid-February. There was bickering and dissension during the trip, but the ships landed safely in the West Indies and headed for the Virginia coast. After surviving yet another storm, the crew sighted land on April 26th and a party was sent ashore. The men found themselves on the south side of the entrance to Chesapeake Bay. They found a wilderness that delighted them and native Americans who welcomed them. These pleasing impressions were short lived. The men sailed some 60 miles up the James River and laid out a settlement on an island-like piece of land. By autumn's end, more than half of them...
were dead. (Dabney, p. 5)

The settlement, known as Jamestown, was established as a commune, a form of government that served as a powerful disincentive to maximum food production. By mid-July, the colony was starving, diseased and under harassment from native Americans. The winter of 1607-08 – one of the coldest on record – brought more deaths, the destruction of their common storehouse from fire, and yet more settlers who consumed yet more food and who also fell ill. But it also brought aid from friendly Indians who taught the colonists how to survive by fishing.

Progress was slow and deadly. The winter of 1609-10 became known as the “Starving Time.” Eventually, however, with additional conquests of the Indians, a stubborn determination to survive the many sicknesses afflicting them and additional shiploads of settlers, a reasonably secure foothold on a permanent colony was solidified. Eventually too, the colonists established the cash crop for which the commonwealth would become renowned. By 1630, Virginia tobacco exports reached 500,000 pounds. At mid-century, conditions in the settlements along the James and the Tidewater region were improving (Dabney, p. 48).

A General Assembly was established in 1619 (Dabney, p. 29). In 1661, that body took a fateful step by legalizing Negro slavery (Dabney, p. 53). There had been blacks in the colony since 1619 (Dabney, p. 32), but now their numbers grew appreciably. In 1671, there were 2000 slaves in the population of 40,000 (Dabney, p. 53). Still though, that was only one third the number of white indentured servants. However, as both Virginia and the mother country came to depend more and more on the revenues brought in by the ever-increasing production of tobacco, the temptation to use slaves in preference to more expensive forms of labor became irresistible (Dabney, pp. 53-5). By 1700, 6000 slaves had been brought into the colony. Their labor contributed to an economy that was ever more reliant on a single crop – a crop whose production was becoming ever more concentrated in the hands of a few large planters (Dabney, p. 71). As it entered the 18th century, Virginia was a colony of marked social divisions.

This century saw a strong push to the west and the settlement of the mountain
regions. But certainly the most significant events of this period were political for it was this time that saw the establishment of the United States as a fledgling country. Virginians served prominently in both military and political capacities in midwifing the new polity. Virginia also served as the site for a number of major battles of the Revolutionary War including the one which proved decisive.

When peace was declared in 1783, the people of Virginia attempted to return to normal conditions (Dabney, p. 154). The state had not suffered overmuch in terms of physical devastation, but substantial emigration from the state had reduced the population (Dabney, p. 155). Moreover, although the old order may have passed, the shape of the future was less than apparent. Within the state, issues of race (e.g., the position of free blacks) and religious toleration had to be settled. And without, Virginia soon became a part of the process for developing a long-lasting constitution for the Republic.

The 19th century began with war. The British blockade and the United States’ own embargo on foreign trade during the War of 1812 choked traffic in and out of Norfolk, Virginia’s principal seaport (Dabney, p. 207). Once the war ended, the integrity of the state itself came into question as the western part of the state raised issues of geographic discrimination. Their discontent sprang from the perceived lack of response on the part of the General Assembly in meeting transportation needs and from the westerners’ pressure to extend the franchise to all taxpayers (Dabney, p. 213). Greater representation was given to some areas of the west and, by 1850, all white males were allowed to vote. But the issue of transportation continued to be a problem. Some turnpikes were built and some attention was paid to canals, but most in the state failed to realize the importance of railroads and their construction was delayed. This meant that produce from the west was largely diverted northward to the port of Baltimore rather than to Norfolk (Dabney, pp. 120-1). The situation became so tense in Norfolk that some there pushed the city to secede from the state and become part of North Carolina (Dabney, pp. 220-1).

As the specter of epidemic approached, the cities of Norfolk and Portsmouth found themselves in a state that seemed to be on a downhill slide. The state’s devotion to a single crop – tobacco – had depleted the soil. The population drain had continued. In
1850, there were fewer than a million Virginians (white and free black) while 388,000
former Virginians lived in other states (Dabney, p. 275). Virginia’s congressional
delegation was only about half what it had been in 1810. Travelers to the commonwealth
commonly reported depressed conditions (Dabney, p. 276). Education was poor. The
state rated near the bottom of the country in literacy (Dabney, p. 279). Manufacturing
lagged...and for the inhabitants of Hampton Roads, things were about to get much worse.

**Portsmouth Background**

In their report to the Common Council after the epidemic, the Portsmouth Relief
Association described Portsmouth as a peninsula in the county of Norfolk lying at a
latitude of 36° 50' north and longitude 76° 19' west and being

beautifully situated on the south side of the Elizabeth River, having a frontage of
nearly a mile on that river. On the opposite bank of the same stream, at a distance
of three quarters of a mile, lies the city of Norfolk with a population of near
sixteen thousand. The river flows between the two cities, affording sufficient
depth of water to float vessels of the very largest class. The social and business
intercourse existing between them is most intimate, and is maintained by steam
ferry boats, which ply continuously during the day, and, for a considerable part of
the night.” (Report of the Portsmouth Relief Association, 1856, p. 77)

The town was comprised of Portsmouth proper with two added sections: Gosport
(described later in this paper) and Newtown, a sparsely populated marshy area. The
Report notes that the streets drain into the waters surrounding the town and “they thus
become the receptacles of all the filth of the town. On their margins, in many places, are
pig-pens, stables, and other nuisances.” (p. 79)

Butt (1971, 1973) provides a background account of the town. The area around
Portsmouth, Virginia was settled by Europeans in the 17th century. In 1608, Captain John
Smith came upon the area in his explorations. Patents of land in the area were granted to
a Captain William Carver in 1659 and 1664, but reverted to the crown in 1676 when the
Captain was hanged for his part in Bacon's rebellion. In 1716, Carver's land was joined
with additional acreage (totaling 1129 acres) and granted to Colonel William Crawford, a
merchant, justice of the Norfolk County Court and member of the House of Burgesses.
Portsmouth was established as a town in 1752 when Colonel Crawford set aside
approximately 65 acres from his plantation for the purpose. The waterfront town was laid
out in a typical grid fashion. The design of the town proved durable. A hundred years
later, Portsmouth was reported to be "a pretty town, laid out very regularly, with streets
crossing each other at right angle. (Report on the Origin of the Yellow Fever in Norfolk
during the Summer of 1855)). Even today, it is possible to find one's way around the
downtown area with a map from that era. Not surprisingly, most of the town's first lot
owners were engaged in maritime activities, either directly or as merchants or
craftspeople. A range of social classes was represented from ship-owners to butchers. A
large tract of land was soon acquired by a businessman named Andrew Sprowle who used
it to establish the Gosport Shipyard (now confusingly called the Norfolk Naval Shipyard)
next to the town in 1767 (Butt, 1973). A creek (now paved over) separated Gosport from
Portsmouth (Butt, 1973). In 1785, Gosport became part of Portsmouth.38

During the Revolution, a Tory raiding party burned Gosport and stole a large
number of naval stores and 137 vessels of various kinds (Parramore, Stewart and Bogger,
1994, 86-102). Nonetheless, Portsmouth suffered far less damage than Norfolk and was
well-placed to become the leading port in the Commonwealth. This did not happen. For
generations, the port's main business had been with the West Indies. Now, with the
British Navigation Acts forbidding the now-foreign United States' carriers from engaging
in this trade, Portsmouth businessmen found themselves unwilling or unable to find other
markets. Wertenbaker and Schlegel (1962, p. 75) blame some of the town's ill fortune on
its treatment of Scotch and English merchants who, believing the town could surpass

38 The naming of Gosport as an area next to Portsmouth mimicked the
Portsmouth/Gosport area in England. The early English spelling of Gosport was God's Port.
(Butt, 1973)
Norfolk as the leading seaport of Virginia, tried to emigrate there. Still resentful of the British, Portsmouth citizens, according to one account, “formed a mob and drove them off.” (Norfolk Herald, August 10, 1802 cited by Wertenbaker and Schlegel, 1962, p. 75 ) Crossing to the other side of the Elizabeth River, the businessmen established themselves in Norfolk and contributed significantly to the recovery of that city. But even earlier (in 1794), a visiting Frenchman described Portsmouth as being “down at the heels because it has no commerce of its own.” Comparing the town to its neighbor across the river, he noted that “house rents are much less than in Norfolk, proving the inferiority of Portsmouth which must import everything from Norfolk” (Butt, 1971, pp. 24-5). War with the Barbary States at the end of the century provided some degree of economic revival due to the construction of a frigate at the shipyard. In 1801, the federal government established a significant presence in Portsmouth by purchasing the Yard for $12,000. The Navy added to its facilities in Portsmouth by the construction of its first hospital there in 1830.

Portsmouth was subject to a number of abortive agricultural booms during the first half of the 19th century. At one point, a number of immigrants decided to plant sugar and citrus groves—crops requiring a different climate. After these failed, there was a mulberry-growing craze. Failed agricultural ventures aside, an increasing military presence and a growing shipbuilding industry (the largest clipper ship ever built south of New York was launched from the soon to be infamous Page and Allen’s Shipyard in 1853) promoted “steady and great” growth—growth that brought an influx of people into the town occasioning an acute need for housing (Holladay, 1936). By 1850, more than 10 percent of the town’s population came from outside the state. Nearly half of these were from Europe—mainly from Ireland, Germany and England39 (United States Census, 1850). To accommodate increasing numbers of travelers, two new hotels were erected in the town in the early 1850s (Emmerson, 1944, p. 215). Still, Portsmouth was reported to be a town of “but little commerce” (Report on the Origin of the Yellow Fever in Norfolk during the

39 This number was calculated from a 10 percent random sample of census data. Gosport data were excluded.
Summer of 1855.

Vaché (1962) claims that there were 10,000 residents in Portsmouth at the time of the epidemic. Census data (United States Census, 1850) demonstrate a figure closer to 8,000. However, the census data captured only the free citizens of the town (black and white). There were approximately 470 free blacks.\(^{40}\) If Vaché is correct, there were, then, about 2,000 slaves. Schoolfield (Report of the Portsmouth Relief Association, 1856, p. 80) places the 1850 population at 10,000-11,000 with one quarter being black—an estimate which is fairly consistent with both Vaché’s figures and the census data. A Portsmouth town councilman of the time described the population as unlikely to have the resources to meet an epidemic. “Our population is mainly a mechanical one, and most of our people are dependent on daily labor for support” (Report of the Philadelphia Relief Committee, 1856, p.89). The Report of the Portsmouth Relief Association (pp. 79-80), however, saw the population in a more favorable light.

On the whole, the population is of a better class than is usually found in seaport towns of equal size. Composed for the most part of well educated mechanics, and respectable laborers, who find employment at the government works at the Gosport Navy Yard, where first rate wages and constant work is obtained, they are enabled to supply themselves comfortably with house room, and to procure proper food and clothing.

Census data (United States Census, 1850) indicated that Portsmouth was a working class town with occupations largely oriented to maritime activities, both military and civilian. The mean worth of real estate owned was $200 per person.\(^{41}\) The Gosport area, with about 550 residents, consisted largely of military personnel. Noted below are the most

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\(^{40}\) This number was calculated from a 10 percent random sample of census data. Those noted as “mulatto” were included as black. Gosport data were excluded.

\(^{41}\) This number was calculated from a 10 percent random sample of census data. Gosport data were excluded.
common adult occupations for the remainder of Portsmouth. 42

<table>
<thead>
<tr>
<th>Occupation</th>
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<tr>
<td>Laborer</td>
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<tr>
<td>Carpenter</td>
<td>126</td>
</tr>
<tr>
<td>Ships Carpenter</td>
<td>93</td>
</tr>
<tr>
<td>Sailor/Mariner/Seaman</td>
<td>71</td>
</tr>
<tr>
<td>Machinist</td>
<td>65</td>
</tr>
<tr>
<td>Blacksmith</td>
<td>63</td>
</tr>
<tr>
<td>U.S. Navy/Marines</td>
<td>61</td>
</tr>
<tr>
<td>Clerk</td>
<td>51</td>
</tr>
<tr>
<td>Merchant</td>
<td>40</td>
</tr>
</tbody>
</table>

Nearly 200 young people were apprentices (United States Census, 1850). Unlike
its larger neighbor across the water, Portsmouth had had a public school system (for white
children) since 1845 and several private schools well before that (Holladay, 1936; Butt, p.
29). There is some discrepancy, however, as to the number of children actually attending
school. Holladay claims that 900 children attended for a full term in 1852. Census data
for 1850 put the number of children attending school at 1500. 43 The mean age of the
population was just under 40 years. 44 Eighty four percent of the adult population claimed

42 A 100 percent sample of occupations was examined. Approximately 95 percent of
census entries were legible enough to be used with confidence. Where notation was not clear, the
entry was omitted from the calculation. There were 2 systematic omissions. “Lawyer” could not
be differentiated from “sawyer.” “Printer” could not be differentiated from “painter.” Gosport
data were excluded.

43 Calculation is based on a 10 percent sample of census data. Gosport data were
excluded.

44 Calculation is based on a 10 percent sample of census data. Gosport data were
excluded.
to be literate\footnote{Calculation is based on a 10 percent sample of census data. Gosport data were excluded.} (United States Census, 1850). The town had at least a rudimentary cultural life with performances by local and visiting musicians and regular dramatic performances (Holladay). The town also supported a literary and library society that met weekly (Minutes of the Portsmouth Common Council, 9/5/54).

According to the Report of the Portsmouth Relief Committee, (p. 80) the population was well-housed, with houses accommodating mainly single families. There was “wholesome and abundant” water supplied from pumps, wells and cisterns and, at least in the summer, reasonably-priced fruits, vegetables and fish available at the market.

The years preceding the epidemic largely followed a pattern of civic development described by Curry (1974) as common to antebellum American cities and documented in the minutes of Common Council meetings (1845-55) including council elections (yearly in April) and the establishment of education and policing systems (usually beginning as a night watch). They also shared common concerns—street paving and lighting, filth and garbage in the streets, the containment of loose swine and dogs, water supplies, waste disposal and care for the poor. Commercial enterprises were regulated and taxed. In the case of Portsmouth, there was also substantial provision for public schools including funds to purchase books for indigent children. A tithe of $2.00 was levied on every white male for the schools’ support (Minutes of the Portsmouth Common Council 1/18/50).

The Council’s assumption of responsibility for public health lay mainly in their concern for clean streets and the consideration given to the question of a Naval pesthouse (a hospital that would serve to isolate victims of contagious disease). Wardens were appointed to “visit the premises of every individual in their respective wards and cause all offal and other substances calculated to generate disease to be removed therefrom into the streets.” Citizens were urged to cooperate in cleaning the premises of “all impurities” (Minutes of the Common Council, 3/24/49). They heard too from concerned citizens. The meeting of 8/5/51 included consideration of a petition for an ordinance “prohibiting the throwing of filth, unwholesome articles, or any substance calculated to fill up the Fish
Dock.” At one point, when it was felt that cholera was a threat, the Council ordered lime or other disinfecting agents for use by the Town Sergeant or police (Minutes of the Portsmouth Common Council, 7/20/54). Hogs were banned from roaming in the streets (Minutes of the Portsmouth Common Council, 8/7/50), but the streets, though wide, remained unpaved and badly drained (Report on the Origin of the Yellow Fever in Norfolk during the Summer of 1855). Police responsibilities included the killing and burial of roaming dogs. They were paid by the dog (Minutes of the Portsmouth Common Council, 2/5/50, 3/6/55), the going rate in 1854 being 50 cents per dog (Minutes of the Portsmouth Common Council, 12/7/54). The action concerning the erection of a pesthouse consisted of sending of a letter to the United States Navy protesting the planned building of a pesthouse on the Magazine grounds because it “would cause fear of spreading contagious disease and be bad for business.” The Council reminded the Navy that it already had a hospital and advised it to use Craney Island to build its pesthouse (Minutes of the Portsmouth Common Council, 12/8/53). In the end, no pesthouse was built (Minutes of the Portsmouth Common Council, 1/3/54).

Much of the Council’s time was taken with issues of public safety and infrastructure. In 1845, the town constable was finally paid $150 for the three years he had served without receiving pay. During the following years, the police presence was regularized and strengthened. Police functions were centered on night watch activities. Although there is no mention of their specific activities in the Common Council minutes, in most southern cities, a large part of night watch duties was devoted to the social control of blacks who might use the opportunity of darkness to visit each other or to seek entertainment in drinking or gambling—all activities as common as they were illegal (Wade, p. 148). In 1850, two watchmen were appointed to “preserve good order of the town during the night time” (Minutes of the Portsmouth Common Council, 4/9/50). In 1852, policemen’s salaries were increased to $200 and later, provisions were made to ensure monthly payment of police (Minutes of the Portsmouth Common Council, 12/7/52, 3/1/53). Reports of police activities were regularly reported to the Council and the force was expanded (Minutes of the Portsmouth Common Council, 6/6/54). In the beginning of
1855, the mayor was given power over the police with tighter controls over their activities (Minutes of the Portsmouth Common Council, 12/55). The town sergeant’s activities were varied ranging from collection of taxes in arrears (later the duty of the town attorney) to responsibility for the town burial ground, to public health activities (Minutes of the Portsmouth Common Council, 5/23/49, 3/7/54, 7/20/54, 6/5/55, 7/8/55).

Fire protection was also a major agenda item during these years. Aside from frequent allocation of substantial funds for equipment and some salaries, attention was paid to keeping order among the volunteer companies. There was also the matter of preventing companies from Norfolk from responding to fires in Portsmouth (Minutes of the Portsmouth Common Council, 5/7/50). Provisions were made for water sources for the companies (Minutes of the Portsmouth Common Council, 8/13/50, 8/5/51, 9/6/53). By 1854, the Council was called on to ensure that the town had a principle engineer and fire wardens to comply with Virginia law and was looking toward a true fire department (Minutes of the Portsmouth Common Council, 9/5/54, 12/7/54).

Infrastructure concerns revolved around streets, bridges and the buildings and equipment needed to promote commerce. Issues concerning street grading and cleaning, bridge traffic and maintenance arose again and again during Council sessions.46 The need for a new bridge once sent the town sergeant on rounds to collect taxes in arrears to help pay for it (Minutes of the Portsmouth Common Council, 8/7/49). The Market House (used for the sale of food and other commodities) was also an object of attention. The purchase of new scales and their housing and elections for persons to measure or inspect commodities were prominent agenda items. Conditions at the Market House became a special object of attention when the epidemic began.

The Council minutes prior to the epidemic reveal an urban government moving, often stumbling, toward more professional governance and struggling with the changes around them. During this period, public health and safety measures were regularized and

46 The concern for street maintenance was a hallmark of the times. Goldfield (1979) notes that by 1830, local governments in the country were paying more for street repair than for any other municipal service.
improved, with the former being a police rather than a medical responsibility—an arrangement that would lead to problems later. The town sergeant and the mayor were placed on salary rather than being paid by fees collected (Minutes of the Portsmouth Common Council, 6/30/49, 2/6/55). Salaries for other officials were set and reviewed (Minutes of the Portsmouth Common Council, 11/30/49, 12/7/52, 1/3/53, 9/6/53). A town attorney was appointed (Minutes of the Portsmouth Common Council, 3/6/55). The system of committees to oversee specific government functions grew. At the same time, the Council was coping with the technological changes of the mid-19th century. Arrangements were made for the provision of telegraph and gas services. The Council’s most problematic dealings came with the Seaboard and Roanoke Rail Road Company. Throughout much of the decade prior to the epidemic, the Council and the railroad company seesawed between agreements and disputes regarding routes and the activities of the company within the town. But they did manage to bring the railroad directly into the town continually bringing in loads of “staves, lumber, tobacco, flour, naval stores, and cotton” (Wertenbaker and Schlegel, 1967, p. 181).

But the same period was marked by fumbling and probably dishonesty. There were occasions when meetings could not be held due to lack of a quorum. On occasion, pay for officials was in arrears and officials were removed after disputes (Minutes of the Portsmouth Common Council, 3/24/49, 7/3/49). There was a record of questionable audits. In 1853, the clerk treasurer resigned and auditors were at least temporarily unable to locate the town account books (Minutes of the Portsmouth Common Council, 1/31/53).

Above all, the period was marked by high levels of town debt. The enormous deficit seen as the town entered the epidemic year (debt service at fifty percent of the budget) was of long standing. The Council sessions were marked by careful attention to financial details, but also by questionable audits and investments. The government’s inability to set its financial house in order meant that some projects were impossible to undertake. A year before the epidemic, the Council received estimates to build a water supply system for the town. At approximately $50,000 (about twice the estimated yearly budget), it is difficult to see how the town could finance such a project, and, indeed, they
didn't. But smaller matters suffered for want of funds also. At the end of 1854, the Council was unable to reorganize the fire department and to hire a fire engineer due to "the financial condition of the town" (Minutes of the Portsmouth Common Council, 12/7/54, 12/12/55). And, although we cannot know what would have been the case if the town funds had been plentiful, provisions for the poor were small and scarce—$100 for books for indigent schoolchildren and a one time appropriation of $200 for wood to be distributed to the poor during the winter of 1854-5. In 1850, however, $300 was appropriated for a public meeting to honor the late president Zachary Taylor. That sum was equal to the entire year's salary for the town clerk/treasurer. In these actions, the Council acted in a manner appropriate for the time. Goldfield (1979) notes that, since the range of potential urban services was infinite and the source of funding for them was largely limited to the taxes paid principally by the property owners who ran or influenced their governments, cities acted out of a simple cost-benefit calculation. Expenditures were largely directed at activities that benefitted the property owners.

In summary, as Portsmouth entered its trial by yellow fever, the town government was largely concerned with day to day affairs that benefitted the well-off. There was no strategic plan for development and certainly none for meeting a crisis of any kind from hurricanes to epidemics. With government a largely amateur activity for well-meaning citizens, its failure in addressing an extreme situation might have been predicted.

The Epidemic in Portsmouth

Blanton (1933, pp. 224-236) provides an account of the start of the epidemic. As in most southern cities in the 19th century, an outbreak of yellow fever was not a new experience for Portsmouth or for Norfolk. Despite active quarantine measures, the 1855 eruption was one of two in Portsmouth and nine in Norfolk during the century. There had, in fact, been a number of cases of the disease in the area in the 1850s. In 1852, several cases had been admitted to the Marine Hospital in Norfolk. In the summer of 1854, the Chimere arrived from the West Indies with nearly the entire crew sickened with yellow fever. Most of them were admitted to the Naval Hospital. Traditionally, the 1855
epidemic is laid at the feet of the Ben Franklin, a steamer from the West Indies that arrived in Hampton Roads in June, 1855. The putative index case for the epidemic was identified in Gosport. He was a boiler repairman who had been working in the holds of the Ben Franklin while it was anchored at a Gosport shipyard.

The Ben Franklin had not been without problems on its voyage to the area. It had entered the harbor June 6th and dropped anchor in the quarantine grounds about a mile below Norfolk. Even before reaching anchorage, the ship had transferred her 50-60 passengers to The Baltimore, a steamboat in the bay, apparently to continue to New York City. The captain told the Norfolk health officer, Robert H. Gordon, that both passengers and crew had been in good health during the 10-day voyage. However, he did report two deaths. The first was that of a fireman who had suffered sudden chest pain and shortness of breath and expired in half an hour. The second was a sailor said to be unused to the working in the heat of the boiler room and who had died apparently of heat exhaustion. The doctor found the ship to be clean and the crew to be healthy, but in view of the fact that the ship had come from an area with an active yellow fever epidemic, she was ordered to stay in quarantine. The captain and crew were allowed to go ashore. On June 18th, the captain, noting the ship’s urgent need for repairs, requested permission to proceed to Gosport. Dr. Gordon again examined both ship and crew and granted permission to proceed to the Page and Allen Shipyard (Report on the Origin of the Yellow Fever in Norfolk during the Summer of 1855, 1857).

Holcomb (1930, pp. 252-5) indicates that the Ben Franklin should have been

\[47\] Forrest (1856, p. 10) reports that the troubles may have started at sea. The ship had been bound for New York City. While still at sea, the captain held a meeting of passengers to decide whether they should proceed to Norfolk or to Baltimore. The reason for this change of plan is unknown. It may have been because of the presence of disease on board. However, the ship was leaking when it appeared in Norfolk, so the decision may have been taken because of the need for repairs.

\[48\] There is some discrepancy in the reports of the numbers of passengers who left the Ben Franklin and the name of the ship to which they transferred. A local newspaper of the time put the number at 49 and reported the name of their new vessel as the Louisiana (Abstracts from the Norfolk and Portsmouth newspapers in The Emmerson Papers).
treated with greater suspicion by the inspecting authorities. After all, the ship had come from an epidemic area and two men had died on the voyage. The passengers on board the steamer may have had doubts about the nature of the deaths for they, “consumed by panic,” all left the ship at Old Point Comfort. While still in quarantine, a member of the crew died. His body was taken ashore and clandestinely buried. Most of the crew deserted the ship. Since the vessel was leaking and badly in need of repair, loss of the crew presented a serious difficulty to the captain. On June 25th, the health officer, with the consent of the Norfolk Board of Health, granted permission for the ship to proceed to Page and Allen’s Shipyard in the Gosport section of Portsmouth. However, the captain was ordered not to break out the ship’s hold. Outside repairs only were to be done. These orders were blatantly disobeyed. Once at the shipyard, bilge water was pumped out, much of the ship’s stores were brought out on deck, and a portion of her ballast was discharged on the wharf. Men were sent down into the ship to work on the engines and boilers. This work continued at least until July 8th when the unfortunate boiler repairman was diagnosed with yellow fever. Several physicians examined him including two naval physicians who were very familiar with the disease. It was their report that caused the Common Council to meet in extraordinary session.

Why did this particular report occasion the meeting? Forrest (1856, pp. 22-3) reports that consultants who had been aboard the Ben Franklin determining the need for repairs had told several citizens of Portsmouth that there was yellow fever aboard the ship. Forrest (pp. 12-5) suggests there was additional evidence of trouble even while the Ben Franklin was undergoing repair. He states that a “gentleman of undoubted veracity” had gone aboard the vessel at the shipyard and was informed by the crew that there was yellow fever aboard and had actually observed a body being placed in a coffin. There was another report of men jumping overboard and swimming for shore to escape the disease. In any case, on the day it heard the news of the boiler repairman, the Portsmouth

49 Portsmouth did not have a Board of Health prior to the epidemic.

50 Naval physicians had good reason to be familiar with the disease. Fifty-four cases of yellow fever had been treated at the Naval Hospital the previous year (Forrest, 1856, p.23).
Common Council was convened in an extraordinary session to consider the case of yellow fever "caused by exposure while at work on board the steamship Ben Franklin lying at Page and Allen's wharf." The Council was sufficiently concerned to order the Town Sergeant to call on the captain of the Ben Franklin and "require her removal forthwith to the Quarantine Grounds..." and was determined to brook no resistance. If the captain did not remove the ship, the Sergeant was to have the ship removed to the Grounds at the expense of her owners. (In fact, the captain did resist and moved the ship back to the Quarantine Grounds only after taking legal advice [Holladay, 1936]). After ordering the removal of the ship, the Council adjourned with the provision that no publication of the meetings' proceedings was to be made in the town newspapers (Minutes of the Portsmouth Common Council, 1855). Of course, word did, in fact, leak out. Holladay (1936) reports that "a perfect tremor of fear passed over the town" at the news of the boiler repairman's death. Schoolfield (Report of the Portsmouth Relief Association, 1856, p. 88) relates the fact that a man had died of yellow fever "spread quickly throughout the community and created the most intensive discussion...Groups discussed it on street corners with fear and consternation."

An anonymous letter writer in Portsmouth confirmed that the first group suffering from the epidemic were the Irish ("Yellow fever in Portsmouth", 1885, July 26; "Telegraph–Yellow fever–Gosport", 1855, July 27). Gosport was an area of Portsmouth lying across a wide marshy creek from the body of the town. It was home to five or six hundred Irish workers and their families as well as the Page and Allen Shipyard. (Report on the Origin of the Yellow Fever in Norfolk during the Summer of 1855, 1857) Labeled by the Report of the Portsmouth Relief Association (p. 80) as "some of the worst population of the town," the residents of Gosport were crowded into about 60 houses. The Irish were noted in the Report as not having "been here sufficiently long to become acclimated" and also as clinging to the ways of their homeland living "huddled together in small, close apartments, in which no regard is paid by them to cleanliness, or to ventilation..."
The Report went on:

On Water street, opposite the ship yard, and distant only a few yards, is located a row of three story brick buildings, eight in number. This block of buildings, was built five or six years ago, and is familiarly called “Leigh’s” or “Irish row,” and the tenements of which it is composed are exclusively occupied by Irish, of the very lowest description. They are filled to the utmost capacity with people regardless alike [sic] of cleanliness and comfort. We do not assert a fact likely to be controverted, when we say that each room in every house lodged a family, and that the population of the “row” at the breaking out of the epidemic exceeded two hundred. The basements of these houses are occupied as low groggeries, and abound in filth and noisome odors. The back lots, which extended to the marsh on the west, were in keeping with the other parts of the premises. The habitations of the pig, that favorite animal of the Irish peasantry, were numerous, and in close companionship of cow sheds and other nuisances. All the lots were insufferably filthy and disgusting; and if their condition was not such as would breed a pestilence, it was certainly well calculated to feed one (p. 82).

According to the Report, the other parts of Gosport were “as clean as any other parts of the town...” (p. 82).

The Shipyard fronted on the river for several hundred feet and extended to Water Street, Gosport’s main street. Three or four wooden tenements housing workers stood hard by the Shipyard (Report on the Origin of the Yellow Fever in Norfolk during the Summer of 1855, 1857). The yard’s wharf was old and decaying with its pine logs saturated with water and rotting. The debris of shipbuilding—wood chips and shavings—covered the wharf to a depth of several inches. Beyond an old brick warehouse

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51 The theory of acclimatization is raised again by the Report’s reference to a number of Gosport workmen hailing from Maine as “being entirely unaccustomed to a southern climate (p. 82).
on the property, lay a structure once used as a dock lined with mud and filled with several feet of refuse from the yard (Report of the Portsmouth Relief Association, pp. 80-2).

Despite efforts to quarantine the Gosport area (erecting a fence, posting watchmen at every avenue, partially destroying the bridge between Gosport and Portsmouth, cutting communications with the Navy yard), there were five cases of the fever in Portsmouth proper by July 22nd ("Yellow Fever in Portsmouth", 1885, July 26; "Telegraph—Yellow fever—Gosport", 1855, July 27). By the 30th, 20 cases were reported in Gosport, "most of whom are our adopted Irish citizens" ("The Yellow Fever at Gosport, 1855, July 30). Schoolfield (Report of the Portsmouth Relief Association, 1856, p.127) reports especially bad conditions among the Irish in Gosport as well as the total lack of any municipal efforts to ameliorate the situation. By July, the cases in Gosport:

had become so numerous that there were not well persons enough left to wait upon the sick; and it was utterly impossible to procure nurses for them. Suffering and alone, the poor creatures were lying without the attendance of anyone, to give them even a drink of cold water. With the exception of the physicians and their drivers, and one or two other fearless and humane individuals, they were shunned by the whole community, and abandoned to their hapless fate.

Still, the main concern of the community was the belief that no cases were actually originating in Portsmouth (rather than Gosport).

The relative indifference to the threat presented by the high incidence of cases among the Irish population was probably, at least in part, a reflection of the common southern belief that yellow fever was a "strangers' disease" (Trask, 1996). It was a popular belief that immigrants to the south required a period of "seasoning" to become adapted to the maladies common to the area. Indeed, their was some validity to the idea of seasoning since, as noted earlier in this work, populations and pathogens do tend to adapt over time to the benefit of both.

The Council did not meet again until July 21st when a session was "convened to
take measures for preventing the spread of the 'yellow fever'." Since the fever was "prevailing to some extent in Gosport," the Council appointed a Sanitary Committee consisting of three members of the Council–Dr. Schoolfield (a physician) and two laymen. The Committee was to “take the matter into consideration, and to take such measures as may be necessary to retard the spread of the disease and secure the public health.” The immediate provision of direct care to the sick (still concentrated in Gosport) was not considered (Minutes of the Portsmouth Common Council, 1855). The Committee instructed physicians of the town to submit case reports to a Dispensary in the High Street. This reporting mechanism failed in early August when the head of the Sanitary Committee himself fell ill (Report of the Portsmouth Relief Association, 1856, p. 124).

By July 24th, news of the fever was spreading. In Richmond, The Daily Dispatch of that date noted that there were cases of yellow fever in Portsmouth proper. The paper also observed that there was no news of this in either the Portsmouth or Norfolk newspapers. The following day, however, the Richmond newspaper ran an article on the fever taken from the Norfolk Herald. Cases of the disease were said to be confined to Gosport (“Yellow Fever at Gosport”, 1855). The Sanitary Committee believed that all cases occurring in the month of July “could be positively traced to Gosport” (Report of the Portsmouth Relief Association, 1856, pp. 124-5). Until the end of July, all cases were thought to have originated in Gosport (“Yellow Fever in Gosport, 1855, July 27). By the first week in August, however, it was clear that cases were originating in Portsmouth and the Sanitary Committee declared the disease to be epidemic there also. When the presence of an epidemic was recognized in the town, Schoolfield (Emmerson, p. 219) describes a pathetic scene as, in a street “alive with people,” a wagon, covered with white, containing an elderly woman and her young daughter looking “for the last time on the familiar objects

By the time of this meeting, the alleged conveyer of the fever was gone from the port. The Ben Franklin had passed another inspection requested by her captain. She sailed July 13th (Blanton, pp. 258-9).

Duffy (1996, p.16) confirms that ignoring the news of the presence of a local epidemic disease was customary practice for the time.
of earth,” moved slowly to the hospital. Whenever or however the disease reached Portsmouth, Forrest (1856, pp. 128-9) describes a swift spread there. He states that the disease reached the main part of the town within two weeks. Deaths rapidly increased to about a half dozen a day. “Citizens hurried away by the thousand.” Even with a smaller population, deaths increased still more rapidly. There were soon 400 cases of yellow fever in the town with about 30 people dying daily even before the disease spread to Norfolk.

The Common Council attempted to hold meetings (apparently to deal with the contagion) on July 28th and August 1st, but failed due to lack of a quorum. There is evidence that Council members were attempting to meet the demands of the growing catastrophe even without a formal meeting. On the 28th, they appointed a three-man committee to travel to Washington to request assistance from the Secretary of the Navy. The latter gave consent for use of the Naval Hospital for yellow fever patients (Holcomb, p. 258). Until this time, the sick had been cared for (or not cared for) at home. However, at the end of July, a hospital was hastily built about one mile west of the town (“Yellow Fever at Norfolk and Gosport,” 1855, August 2). Martha Buxton (1929), a well-born Portsmouth resident, noted that the “authorities” had at first attempted to isolate the cases by transporting the patients out of town. She recalled “peeping through the slats of the closed front windows at the procession of people, ill of the disease, carried by carts, on their way to the pesthouses, built just out of town...” (Porter family records, p. 14). In fact, the yellow fever hospital, which had been the notion of the Sanitary Committee had been erected in the course of just two days (Holladay, 1936) by a large

54 At a time when permanent hospitals were uncommon, Portsmouth was singularly blessed in having the U.S. Naval Hospital within its borders. It should be noted that the Hospital did, in fact, also serve a great use for its normal population. The earliest cases to enter the Hospital came from the Marine Barracks. By August 10th, there were 40 cases of yellow fever under treatment in the Hospital (“Yellow Fever in Norfolk and Portsmouth,” 1855, August 11). Two weeks later, that number had doubled. (“Naval Hospital,” 1855, August 25) By mid-September, the wards at times contained 150-200 patients (Forrest, 1856, p. 227). In all, over the course of the epidemic, 587 yellow fever patients were cared for in the institution. Of those admitted, 200 died. (Holcomb, p. 264) The Federal government also assisted in supplying coffins to the town. (Holcomb, p. 259) The boat shop at the Navy Yard was converted to the manufacture of coffins during the emergency (Emmerson, 1944, p. 216).

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force of volunteers, stocked with bedding and medicines, and opened the last day of July. Finding occupants for the hospital presented unexpected difficulties. At this point in the epidemic, the patients in need of care were found mainly among the Irish in Gosport. According to the Reverend James Chisholm, Rector of St. John’s Episcopal Church at the time, this population positively refused to leave their “pestilential abodes.” Father Devlin, the town’s only Roman Catholic priest, gained their consent to go to the hospital “by mingled threats and promises.” When the patients agreed to come to the hospital, a new obstacle presented itself. Wagons and people to load sick people into them were nowhere to be had. Finally, the next morning, the doctors themselves loaded nine wagons—a practice they continued throughout the course of the epidemic. Some of the patients, relates Reverend Chisholm, were “lying prostrate, others in sitting posture, all with agonized faces and uttering fearful groans.” (Chisholm cited in Holladay, 1936) By nightfall of that day, the 20 by 40-foot structure was completely filled. At that point, permission was obtained for the use of the Naval Hospital. The patients were moved to the latter institution and the temporary hospital was immediately closed (Report of the Portsmouth Relief Association, 1856, p. 128).

The Council did succeed in meeting on the 2nd of August. It was formally announced at this meeting that the Naval Hospital had been “obtained for the accommodation of the sick.” Two members were added to the Sanitary Committee and five hundred dollars were appropriated for Dr. Schoolfield’s use. An assistant to the Town Sergeant was appointed. The Council took further measures to address the epidemic. Following classic sanitarian principles, they voted to add three horses and carts (to the existing three) to remove “rubbish and filth” from the streets every day (Minutes of the Portsmouth Common Council, 1855). Portsmouth streets were particularly problematic. Although they were well laid out, wide, and straight, newspapers of the time often called attention to their poor condition. Legislation had been passed so that pigs and

55 Butt (p. 29) also reports that the building used to house the town’s first public school was also used as a yellow fever hospital and later as an orphan asylum.

56 The town promised to pay for the use of the Naval Hospital.
cattle were no longer allowed to roam at will, but the streets, perhaps as a result, were choked with grass and weeds (Holladay, 1936). The Sanitary Committee ordered that hogs were to be removed from their in-town pens and the sites were to be limed. This measure was to be enforced by the police. They resolved to enforce the city ordinance against burials within the precincts of the town since there had been illegal burials “of late.” (In-town burials had been forbidden by the state since 1832 [Holladay]). However the Market House, initially closed, was reopened despite its “offensive odor.” The Council resolved to meet every day during the epidemic. However, it was five days until the next meeting at which two members resigned their offices. Three hundred additional dollars were appropriated for the use of the Sanitary Committee. That was the last meeting for three months (Minutes of the Portsmouth Common Council). There was official action, however. The mayor set aside August 8th as a day of humiliation and prayer “for the confession of sins, and earnest prayer to the Almighty that His scourge may be removed” (Yellow Fever in Norfolk and Portsmouth, 1855, August 9th). By the middle of the month, it was reported that only one councilman (possibly Dr. Schoolfield) remained in the town, yet the president of the Common Council wrote to the Mayor of Baltimore requesting medical aid on the 20th (Yellow Fever in Norfolk and Portsmouth, 1855, August 16th; Report of the Portsmouth Relief Association, p. 136). On the 15th, Frederick Cridland, Her Britannic Majesty’s Acting Consul at Norfolk, Virginia sent a dispatch to the Earl of Clarendon, Secretary of State for the Foreign Office reporting on the epidemic in both cities.

It is my painful duty to report to Your Lordship that the Yellow fever in a very malignant form and as an epidemic is now raging in this City and in the Town of Portsmouth.

The Board of Health reports that the disease is on the increase and likely to continue as an epidemic for 40 days.57 The Merchants and Citizens generally panic struck, have abandoned their businesses and fled from the Port and almost a total

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57 Forty days is a traditional quarantine period.
suspension of business has been the consequence.

From this dispatch, the news was disseminated in Europe causing a number of countries to implement quarantines for shipping from a number of American cities (Shipping Gazette and Lloyd's Weekly Summary cited by Trask).

A notice in the Portsmouth Transcript on September 25th stated that the Council was still without a quorum, however, "those of them who remain, cooperated with by a few citizens, have undertaken the management of affairs." These affairs included supplying the wants of the needy and attending to the sick and dying. The mayor himself remained and was very active in bringing relief into the town. He fell ill of the disease, but recovered (Forrest, 1856, p. 79; Report of the Philadelphia Relief Committee, 1856; Report of the Portsmouth Relief Association, 1856).

When the disease seemed confined to Gosport, some residents of that section moved to Portsmouth seeking "purer air and cleaner quarters." A number of them found refuge in the Academy, a private school (Holladay, 1936). Not surprisingly, when the true extent of the epidemic became known, Portsmouth residents began to flee the town. According to Vaché, (1962, p. 52) only about 4,000 residents (evenly divided between black and white) remained in the town during the course of the pestilence. Holladay confirms this figure. Forrest (1856, pp. 171, 205) estimates that 15,000 people left the two cities during the epidemic and that about 10,000 people left Norfolk. That being true, 5,000 left Portsmouth. Taken together, the two accounts would indicate that between 5,000 and 6,000 people left the town. This figure is corroborated by Councilman James G. Holladay who estimated that 5,000 people remained in Portsmouth in late August (Report of the Philadelphia Relief Committee, 1856, p. 88). Another report placed the number remaining in Portsmouth in late August at 4,000 ("Portsmouth", 1855, August 31). Yet another placed it at 2,0005 ("From Portsmouth", 1855, August 31). A

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58 Of course no official records of those who left were kept. An additional problem is that the black population, whether slave or free, were apparently not consistently included (or excluded) from estimates made at the time. This low estimate may be for whites only.
thousand workers in the Navy Yard had “taken their discharges” by the middle of August ("From Norfolk and Portsmouth”, 1855, August 16).

Who remained in the town? Trask (1997) notes that those who remained in southern cities during yellow fever epidemics were “mostly slaves, free blacks, and working-class whites.” Certainly this was the case in Portsmouth. Holladay (1936) states the remaining population were those who did not have the resources to leave. “Most of those remaining here are persons whose rather limited means did not admit of flight, and who in health, were rather short of ‘helps’.” Blacks figured largely in the numbers of those who could not leave. The Portsmouth Transcript reported in mid-August that “probably not more than 1,500-2,000 whites” remained in town (“Progress of the Fever”, 1855, August 20). Schoolfield reports that a little over 2,000 whites remained in Portsmouth (Report of the Portsmouth Relief Association. 1856, p. 142). There were, at the time of the epidemic, about 2500 blacks living in Portsmouth (Report on the Origin of the Yellow Fever in Norfolk during the Summer of 1855, 1857). Taken together, the figures suggest that nearly all of the black population remained in Portsmouth. Chisholm (cited in Emmerson, 1944) adds contemporary verification in his statement that, by August 4th, “whole streets of the best located and built in the town, are left without a white inhabitant.” Certainly the free black population lacked the resources for flight...and where could they go in the slaveholding south? But why did slave owners leave their valuable property behind? Perhaps the belief, common at the time, that blacks did not suffer from yellow fever, enabled slave holders to leave their people behind with equanimity. Then too, slaves may have been left behind in the expectation that they would protect their owners’ property.

At least one slave owner, in fact, remained and cared for his slaves. John L. Porter, a prominent Portsmouth citizen, sent his family to Washington, DC, then attempted to gather his few slaves, who were hired out, at his home where he made

59 A similar racial difference in the ability to flee the epidemic was also seen in the Philadelphia experience of 1793 when one in four white Philadelphians fled, but only one in ten blacks. A lower incidence in black death rates was also noted there (Klepp, 1997, p. 167).
arrangements to care for them. One, a certain Willis Hodges, refused to come. But when Hodges fell ill in his own cottage, Porter found a wheelbarrow and two black women to lift him into it and wheel him to Porter’s home. There, he recovered. Porter’s care was repaid when he himself fell ill. His slave stayed by his side for three days and nights, “never changing his clothes, never neglecting him one minute in his helplessness, with his people all away, until the fever broke and the danger was past... (Buxton, p. 17). Porter, however, was not a typical slave owner. Indeed, his grandfather had freed all his slaves on his death and the few slaves owned by John Porter had come into the family as possessions of his wife. One of these was Willis Hodges. Hodges had married Matilda, a woman owned by a Colonel Binford and they had three children. On the Colonel’s death, Matilda and the children were to be sold. Hodges begged Porter to buy them to keep the family together, and, although he did not feel the need for additional slaves, he did so. Matilda apparently became the Porter’s cook, and a very poor one at that. Willis Hodges seemed to enjoy a special place in the family. In fact, he spent evenings in the kitchen being taught to read by the Porter’s young daughter—an illegal activity at the time (Buxton, pp. 14-18; Kolchin, p. 129). Hodges’ motives for the heroic nursing care of his master are unknown, but it was clearly in his best interest that Porter survive. There was a slave market in Norfolk, and ships left the port regularly bearing cargoes of slaves destined for the market in New Orleans (Johnson, 1999). Porter’s death could shatter Hodges’ own family.

Locales surrounding Portsmouth immediately established quarantine measures, although these were, for the most part, temporary (Armstrong). But, despite the prospect of fines as high as $100 for Portsmouth citizens entering the countryside surrounding the town (Report of the Portsmouth Relief Association, 1856, pp.116-7, 130), contemporary accounts tell of the areas around Portsmouth being “overrun” – “...private houses, barns, kitchens, schoolhouses, churches, tents, cabins and other kinds of shelter are all crammed” (Forrest, 1856, p. 47). Schoolfield states that “two or three, or

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60 Norfolk, suffering its own epidemic, established a quarantine directed at Portsmouth residents. A passport certifying that the bearer had not been exposed to yellow fever and permission from the Norfolk Board of Health was necessary to enter Norfolk (Portsmouth-to-Norfolk passport Required, 1964).
even more families were sometimes crowded together in the same house, and in some instances in the same room” (Emmerson, p. 219). Many citizens simply camped in the woods at a distance from the town (“Yellow Fever in Norfolk and Portsmouth”, 1855, August 16) or built temporary huts along the road for shelter (Holladay, 1936).

The population also fled by ship. Although some ships were avoiding the port, others stopped to provide transportation for a panicked people. The steamer Coffee, for instance, was reported to have left Portsmouth “loaded to her guards” and leaving 100 people on the dock “praying to be taken on board” (Yellow Fever at Norfolk and Portsmouth, 1855, August 7). Holladay reports an eyewitness account of the crowds at the wharf hoping to escape.

I never witnessed such a panic as I encountered this morning. Nearly an hour before the boat started, the whole space was covered by trunks, carpet bags and boxes; thronged by an immense mass of human beings, of all ages and conditions; such a number that it was feared that the boat could not take all on board. When she made fast there was not only pushing and shoving, but actual fighting occurred.

By mid-August, yellow fever cases were continuing to multiply. Nurses were desperately needed. Efforts to recruit black nurses for twice the usual wage were unavailing (“Yellow Fever in Norfolk and Portsmouth,” 1855, August 16). The Common Council reported that $5,000 had been spent to that point “for the sufferers” and that their funds and resources were “well nigh out”61 (“Want Money”, 1855, August 13). Forrest (1856, p. 55) reports that about the 24th of August, 20-30 Portsmouth citizens per day were “falling” [sick]. An incidence of 30 cases per day would amount to nearly a thousand in a month—well beyond the normal capacity of the town to cope. It was

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61 Portsmouth was poorly prepared to sustain the costs of an epidemic. At the first Common Council meeting of the year (January 2), the town was noted to have a debt of more than $171,000 (Minutes of the Portsmouth Common Council, 1855).
reported that on the 23rd, one physician alone (Dr. Trugien) saw 100 cases (Report of the Portsmouth Relief Association, p. 169). By the 28th, a member of the Common Council reported that there were at least 300-400 active cases (Report of the Philadelphia Relief Committee, 1856, 88). Another report placed the case number at 500 at this time (“Progress of the Fever”, 1855, August 28). One reporter told of 212 deaths between August 9th and 27th (“The Latest for Portsmouth”, 1855, August 28). Another reported 94 deaths during five days alone (“The Fever at Norfolk and Portsmouth,” 1855, August 29).

At first, September brought no relief. During the first week of the month, 150 persons died (Report of the Portsmouth Relief Association, 1856, p. 137). The condition of the population was desperate.

Nurses cannot be obtained, friends desert, and in very many cases there is not a soul to attend the sick and dying, but the undertakers’ employees (his hearse driver, and driver’s companion, both colored men) to put the dead into their coffins and graves. Literally the sick attend the sick, and almost literally, the dead bury their dead...This disease has deranged every department of business, and is prevailing to a greater or less degree in almost every family. The result is, great, and general destitution prevails...(Report of the Philadelphia Relief Committee, 1856, pp. 88-9).

Accounts reaching Petersburg described a situation where “whole families are lying ill, without the means of getting a drop of water to cool their parched tongues” (“Appalling Accounts,” 1855, August 23). According to a visitor, the town presented “a gloomy and desolate appearance. Nearly every store is closed, and the streets are more quiet than on Sunday” (“From Norfolk and Portsmouth, 1855, August 24). Another observer wrote:

I find this place even more deserted than Norfolk. I have spent some three hours here, and as yet have seen no one I have known before, although enjoying the
acquaintance of many here about three months ago. The stores are nearly every
one closed, and a general gloominess and desolation prevails. There is not a hotel
open in the place, and from appearances I infer all have left except the sick and
those attending to them” (“Progress of the Fever, 1855, August 27).

Another visitor coming from Norfolk agreed.

On landing on the Portsmouth side of the river, all seemed changed...The streets
seemed literally deserted...I met but one white person, and saw but one store open.
As I passed the end of the market house, usually crowded by the country people, I
saw but two market carts. The negro [sic] drivers of these carts were sitting on
the curb-stone beside them, and they, with their horses looked as if wilted by the
heat; I saw no one there to buy their marketing (Armstrong cited in Emmerson,
1944, p. 223).

The visitor noticed that a man who knocked at a house door was not admitted, but rather
engaged in conversation from a second floor window as if to prevent infection by direct
contact, and goes on to describe a silent, empty downtown and an almost deserted ferry
station where all talk was of the fever (Armstrong). One sound, however, became
characteristic during the period. Wagons loaded with empty coffins passed continually
through the streets (Report of the Portsmouth Relief Association, cited in Emmerson, p.
222).

One undertaker remained in the town (Report of the Portsmouth Relief
Association, p. 138). Grave diggers were in short supply. There were reports of hastily
dug over-shallow graves (“Progress of the Fever,” 1855, August 24). The usual complex
rites concerning burials disappeared, replaced by an almost assembly-line type process.

In burying the dead, there is little ceremony; before the poor sufferer has breathed
his last, his coffin is spoken for, and arrangements are made for his interment.
Within an hour or two after the breath has left the body, it is placed in a rude, stained coffin, deposited in a hearse and driven off by a negro [sic] to the graveyard, without (in almost every instance) a single relative or friend to see it deposited in the grave. No religious services are performed, and unhonored and unsung, and I had almost said—unwept, they are put out of your sight forever ("The Fever at Norfolk and Portsmouth, 1855, August 29).

Schoolfield (Report of the Portsmouth Relief Association, p. 139) even reports "an over-anxiety to get rid of the hapless victims as speedily as possible. When all hope of recovery was gone, and death was inevitable, its approach was looked for with manifest impatience." Arrangements were made for burials even before deaths had occurred. One victim who survived, actually recalled hearing friends making arrangements for his funeral (Emmerson, 1944). Unshrouded, unmourned bodies were simply placed in common coffins, loaded into hearses, and buried without notice (Report of the Portsmouth Relief Association, 1856, p. 139). As conditions worsened, trenches were dug for burial of up to eight bodies at a time (Holladay, 1936). These accounts of burials without ceremony are particularly striking in view of the fact that the customary Portsmouth funeral rites of the time were 'conducted with as much etiquette as a coronation” and included vigils over the body, specially printed funeral invitations, special clothing and decorations, lavish food, flowers, long processions, and a great gathering of family and friends (Holladay). Coffins were in short supply. The Reverend Chisholm describes quarreling and fighting over a load of coffins that arrived on a boat from Baltimore (Chisolm cited in Holladay). The commanding officer of the Gosport Navy Yard put his remaining staff to work to supply the necessary "rude tenements of the dead”, although it appears that this effort was personal rather than official (Report of the Portsmouth Relief Association, 1856, p. 138).

All the business of the town—"all merchantile pursuits and operation”—essentially stopped (Report of the Portsmouth Relief Association, 1856, p. 13). The port closed save for the small steamer, the J.E. Coffee, which Armstrong (1856) reports went to meet incoming relief ships from Richmond and Baltimore. Coffins were the main import.

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Armstrong reports that the Coffee’s entire deck would be “piled with empty coffins.” As the port closed to traffic and chains of supply became compromised, conditions of scarcity developed. Holladay (1936) reports conditions of near famine. By the latter part of August, only three grocery stores remained open (“From Norfolk and Portsmouth, 1855, August 23). By September, these were closed (Holladay). People were reported as living “almost entirely on salt provisions (“Progress of the Fever”, 1855, August 31). Only one of the three drugstores was open (Progress of the Fever”, 1855, August 25). At one time, it was reported that there were no more than 30 ounces of quinine (used for the treatment of the fever) in Portsmouth (Report of the Philadelphia Relief Committee, 1856, p. 88). In both Norfolk and Portsmouth, provisions of any kind (supplied largely from the cities of Philadelphia and Baltimore) were not to be had from any source other than the Relief Association (Portsmouth) and the Howard Association (Norfolk).62 Indeed, Forrest (1856 pp, 59, 159) reports that crowds almost constantly gathered at the office of the Portsmouth Relief Association “seeking supplies for their destitute families.”

In the latter part of September, the air cooled and the number of new cases fell off sharply (Report of the Portsmouth Relief Association, 1856, pp. 139-40). By the eighth of October, Dr. Schoolfield stated the diseases had “nearly burnt out” mainly because nearly everyone in Portsmouth had already had it. In fact, he estimated that 90 percent of the population had been sick and that 35 percent of them had died (Report of the Portsmouth Relief Association, 1856, p. 114). The epidemic, in fact, was nearly over. By mid-October, the town’s inhabitants were returning (Holladay, 1936), although the last deaths from the disease were not reported until November 10th (Emmerson, 1944, p. 224). The doctor’s estimate of the dead was a bit high. The Relief Association reported a little over 1,000 deaths (Report of the Portsmouth Relief Association, pp. 185-93). The Common

62 Howard Associations, named after the 18th century philanthropist, John Howard, existed in a number of cities. The best known was incorporated in New Orleans in 1842 to care for epidemic victims. Although men from diverse occupations were eventually included, the original “Howards” were clerks and members of a Fire Company. In early epidemics they provided direct care. But as time went on, they served more as organizers, fund raisers, and managers (Carrigan, 1994, p. 347).
Council did not meet again until the 11th of November. Oddly enough, there was no mention of the epidemic at that meeting although the business of the meeting consisted of filling official vacancies. The four remaining meetings that year dealt with the aftermath of the epidemic—additional filling of vacancies, a public meeting to “express the gratitude of the people” for assistance received during the epidemic, to appropriate extra monies to the police for their services during the epidemic,63 and to arrange for care of the orphaned children (Minutes of the Portsmouth Common Council, 1855). There were a substantial number of orphans. The Philadelphia Relief Committee utilized “leftover” funds for investment to be remitted to orphan asylums in Portsmouth and Norfolk that were to be established in the wake of the sickness. Holt Wilson of Portsmouth identified 48 children as having been orphaned in that town by the epidemic (Report of the Philadelphia Relief Committee, pp. 21, 116). In December, the Portsmouth Common Council noted 45 orphans of the epidemic as still being housed in Richmond. Several members of the Council, assuming the former duties of the Relief Association, had traveled to Richmond to start to make provision for their care and support (Minutes of the Portsmouth Common Council). At year’s end, the transition from Relief Association to normal government, from dealing with the epidemic to looking to prevent the next pestilence disaster had begun.

The African-American Experience of Yellow Fever in Portsmouth

Approximately 2500 blacks were living in Portsmouth at the time of the epidemic. About 2000 of these were enslaved. All, slave or free, experienced life in a very different way from the white population. Following the urban customs described elsewhere in this paper, many slaves were hired out to others, sometimes on rather lengthy contracts. Male slaves were required to have a license to work for someone other than their masters. A

63 The extent of the role of the police in the Portsmouth epidemic is not clear. There may have been some disorder in town since The Virginia Gazette reported on September 6th that a representative from Portsmouth and Norfolk had been sent to the see the President of the United States to request that the cities be placed under martial law “for the protection of property there.” In any case, martial law was never declared.
system of passes allowed slaves to move about the town to and from their employers. Slaves caught on the streets without a pass were subject to imprisonment or whipping. The criminal justice system also treated persons according to color. For stealing chicken eggs, for instance, whites were fined $10 for each offense while slaves or free persons of color received 15-30 lashes (Minutes of the Portsmouth Common Council, 7/2/49). A sign placed on the Pritchard bridge announced that for driving “any horse, dray, cart, or other vehicle” over the bridge, the penalty was $2 for whites and “not more than 20 lashes” for slaves or free negroes [sic] (Minutes of the Portsmouth Common Council, 6/3/51).

Free blacks were hardly free. Many laws that applied to slaves also applied to them. Free blacks, like slaves, were forbidden to smoke on the streets (Holladay, 1936). More importantly, free blacks, like slaves, were forbidden to assemble unless white persons were also present (Lawerence, 1953). Free blacks who appeared to be “habitually idle” could be arrested and hired out to the highest bidder for a period up to a year. Non-enslaved blacks were considered to be a nuisance by the white community, and petitions were sent to the legislature asking that something be done to rid the community of them (Holladay).

There was a contemporary difference of opinion as to whether the black population of the cities enjoyed a greater resistance to yellow fever than whites. Armstrong, writing of the Norfolk epidemic, states that he agrees with a remark that blacks “cannot take the disease.” Dr. Williman (1856), a physician volunteer who came to Norfolk from North Carolina to aid in the epidemic, reported that, at first, there had been a “confident belief that the black population of Norfolk would pass through the approaching disorder with comparative immunity.” However, he states that blacks were “stricken almost at the same moment with the white inhabitants.” He attributes the apparent susceptibility of the black population to the presence of an “aggravated disease” being present in white patients. His main concern with the incidence of the disease among blacks was that the knowledge that they might get the disease “proceeded so far as often to impair the service due from servant to master.”

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James Holladay, a Portsmouth councilman, reported that the disease spared no one of any age, sex, or color (Report of the Philadelphia Relief Committee, 1856, p. 88). Forrest (1856, p. 103) states that by mid-September, several hundred “colored people” were down with the fever, and many had died or were dying. Dr. Schoolfield, of the Portsmouth Sanitary Committee, believed that blacks got the disease later in the course of the epidemic and that their disease was milder in form. He estimated that two thirds of the black population suffered from yellow fever (with mulattos being more susceptible) with black mortality at 5-8 percent (Report of the Philadelphia Relief Committee, 1856, p. 114). Savitt, reviewing the figures in the Report of the Portsmouth Relief Association, has estimated that just 9.4% of all the dead in Portsmouth were African-American (Savitt, 1981/2002, p. 245).

Buxton (p. 17) restates the belief that yellow fever “is not a hard disease on colored people.” Still, immune or not, the black population in Portsmouth was brought low by the fever. Holladay, 1936) states that the “Negroes [sic] in both towns were thoroughly demoralized though they seemed to be practically immune from the fever. No amount of money, no appeal of any kind could induce them to nurse the sick, or indeed render assistance of any kind.” She also complained that “darkies” refused to drive the wagons to move orphans from the Naval Hospital to the Academy.

Vaché (1962, p. 52) claims that 2,000 black residents of Portsmouth remained in the town during the epidemic. He then states that 1080 white citizens are known to have died from the fever. Figures from the Portsmouth Transcript suggest that the actual figure for blacks remaining in Portsmouth may have been closer to 3,000 (“Progress of the Fever, 1855, August 20), although Dr. Schoolfield also estimates the number of blacks remaining in the town as slightly less than 2,000 (Report of the Portsmouth Relief Association, 1856, p.142). The Naval Hospital kept rather careful statistics concerning admissions and deaths. However, only 18 blacks were admitted to the hospital during this time. Of these, 2 died—a death rate of 11 percent. The death rate for the whites

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64 It should be noted that while hospitals were a rare institution at the time, there were hospitals in the Commonwealth that admitted blacks. There is also ample documentation of
admitted to the hospital was 36 percent (Holcomb, 1930, p. 264). However, comparisons are difficult to draw because of the small number of blacks admitted.  

Forrest (1856, p. 205) suggests that considerably more whites than blacks died in Norfolk. He states that two out of three white persons who remained in the city perished, but only one out of three perished if the white and black populations are counted together. The Portsmouth Relief Association lists 100 black deaths (Report of the Portsmouth Relief Association, 1856).  

If 2000 blacks remained in the town, this means a mortality rate of only five percent. This number is at odds with the estimate of eight percent black mortality contained elsewhere in the body of the Report (p.136), but both figures place black mortality as considerably less than that of whites. It would seem that, although blacks clearly suffered from the disease, they were not as apt to die as whites.  

Carrigan exploitation of black patients as research subjects in these facilities (Byrd and Clayton, 2000 pp. 265-6, 280).

The extent of the medical and nursing services delivered to the black population during the epidemic is not clear. We know that black volunteers came to the area, but, since the white population generally believed that it was the place of blacks to serve whites, it seems unlikely that the black volunteers would be assigned to care for the black population. Primary sources (written by whites) seem always to identify blacks by race, so the specific absence of references to race when writing about victim services (e.g., visits to homes) implies that the services were rendered to whites. In more settled times, the quality of health care for blacks was varied with slaves considerably more likely to receive a higher standard of care than free blacks. A master with a significant investment in a slave (or a sense of responsibility) could ensure that a sick slave received good care, including care in a hospital for black patients or in a segregated wing for black patients. (It should be recalled that hospitals for blacks or for whites were rare in America in the mid-19th century. Sick people were generally cared for at home.) Free blacks were adrift in a society that cared little about them and suffered the highest mortality rates of any urban group (Wade, pp. 135-141, 269). Since most slave owners left Portsmouth during the epidemic apparently leaving most of their slaves behind, their influence in ensuring good care for their slaves was probably diminished.

Deaths of enslaved blacks were listed by name of their owner, e.g., “Todd, Merit’s Henry”. Free blacks were listed by their own names (often a single first name) followed by the letters “f’n” designating their status.

Although black losses were relatively low, The Report of the Portsmouth Relief Association (p. 182) lists the death of slaves as a prime economic loss of the epidemic.

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(1988, p. 63) confirms this notion “...blacks were not immune to yellow fever, but they usually presented mild symptoms, and relatively few died of the disease.” In a later work, Carrigan (1994) speculates that yellow fever may have been kept at bay in early 19th century New Orleans due to the large number of immune blacks and Creoles in the city at that time. When significant numbers of European immigrants swelled the city’s population, yellow fever became a continual problem. Bogger (1997, p. 125) suggests that blacks in Norfolk suffered fewer fatalities from the fever due to indirect [italics mine] exposure in Africa. However many Portsmouth blacks died, few were buried by the Relief Association. The Association paid for over 700 burials. Probably seven of these were for black residents (Report of the Portsmouth Relief Association, 1856, pp. 194-9).

A number of blacks entered the epidemic area to care for the sick. Blanton (1933, p. 263) notes that colored nurses were brought in from Charleston, New Orleans, and elsewhere. The conditions under which the black nurses were coming were uncertain, although Bogger (1997, p. 126) states that 19 nurses came to the area from Charleston as volunteers. One, Snow Brown of Charleston, came “with his master’s written permission.” Another was a “free colored man.” (Daniel Ravenel, September 22, 1855 cited in the Report of the Portsmouth Relief Association, 1856, p. 319).

Blacks trying to leave the epidemic area were treated differently from whites. One town, Welden, NC, demonstrated this kind of discrimination. Whites entering Weldon from the epidemic area were to be heavily fined ($100/day). Slave owners were to be fined $50/day for any slaves they knowingly allowed into Welden. Free blacks entering Welden from the epidemic area were to either pay the fine or receive 39 lashes. But the language in which these directives were couched left no doubt as to the fate of blacks entering the town. “...if any poor negro [sic], likely to have the fever in his blood, shall enter our town of Welden...we’ll strip to the skin and lay the lash, and then turn the fugitive out into the swamps to die” (Armstrong).

At least one black inhabitant of the town benefitted from the epidemic—Bob Butt, a slave who served as the town gravedigger. “This humble negro [sic], in his line, performed duty beyond all price. From morn till night, he labored at his spade, and
frequently made the grave-yard his resting-place. Under his direction and superintendence, all who died of the fever were decently committed to their mother Earth,” (Report of the Portsmouth Relief Association, 1856, p. 15). Not only was he paid nearly $1400 for his efforts, when the epidemic was over, Portsmouth citizens raised the money to buy the gravedigger’s freedom. He spent the remainder of his life as the “much respected” sexton of Trinity church (Report of the Portsmouth Relief Association, 1856; Holladay as cited in Vache, 1962, p. 53).

Savitt (1981/2002) has argued that the presumed African-American resistance to yellow fever increased the demand for their services and elevated their status. However, with the exception of the experience of Bob Butt, any elevation in African-American status in Portsmouth appears to have been temporary. Like whites, African-Americans came into the area to serve, but their contribution was unremarked. Indeed, most comments concerning black behavior by white writers of the period have to do with the refusal of some blacks to tend the sick or the dead. There seems to be a clear expectation that blacks should be willing to perform these jobs, but not a concomitant expectation that whites should also, nor is attention paid to whites who may also have refused to help, let alone to those, including those in positions of leadership, who abandoned the town.68

Managing the Epidemic in Portsmouth

A number of commentators have described and analyzed the urban response to epidemics. The paradigmatic reference for civic experience in time of plague is certainly that of Thucydides’ description of the plague of Athens. His picture of a community overwhelmed and falling into a chaotic, lawless state serves the archetype for later narratives. Crushing fear, hopelessness, disruption of social customs and religious

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68 Actually, blacks in Portsmouth fared better than those in Philadelphia in 1793. In that city, free blacks were the very first to respond to the mayor’s desperate call for help. Despite the fact that they spent the entire epidemic toiling to tend the sick and bury the dead, the only notice of their help seemed to be unproven accusations that some of them had stolen items from the homes of the ill (M. Carey. A short account of the malignant fever, lately prevalent in Philadelphia cited in Griffith, 1997, pp. 54-5).
practices, futility of prevailing medical treatments are the repeated universal experiences in
times of plague and are seen again and again in experiences with yellow fever. Matthew
Carey’s (Carey’s *A short account of the malignant fever. Lately prevalent in Philadelphia*
as cited in Griffith, 1997, pp. 49-51) well known account of the great 1793 yellow fever
epidemic in Philadelphia clearly mirrors the experience of the Athenians in its account of
fear, civic breakdown, social isolation and abandonment of religious rituals. Where
Thucydides notes the prevalence of lawless and immoral behavior by a population who no
longer feared their consequences, Carey provides chilling psychological imagery.

Indeed, at this awful crisis, so much did *self* appear to engross the whole attention
of many, that less concern was felt for the loss of a parent, a husband, a wife, or
any child, than, on other occasions, would have been caused by the death of a
servant, or even a favourite lap-dog.

However, he, like Thucydides, also notes the courageous behavior of individuals who
“risked and sometimes sacrificed their lives to tend to those in need, even strangers.”

Carey also documents the inadequacy of the government to manage the epidemic
and the raising of a volunteer organization to cope with the illness in Philadelphia. This
dependence on volunteer associations in lieu of government is a hallmark of the American
yellow fever experience and raises a number of issues as to the appropriate role of
government in civic life. In our present system, a city dweller might expect to look to
his/her city, county, state or national government for assistance in time of need. In the
historical American experience of yellow fever, cities were by and large, on their own.
Philadelphia, during the 1793 experience, was the nation’s capital. The only federal
response, however, was indecision as to whether the government should return to the city
at the end of the summer if the epidemic was still in progress. The notion that the nation
or even the state was obligated to relieve the suffering of the citizens of the city was not
even imagined.

Rosenberg (1992, pp. 281-2) has described the classical civic response to epidemics.
Recognition that an epidemic exists is slow. Commercial interests are reluctant to face the threat of a disruption of trade. Municipal authorities do not wish to face an epidemic's effect "on budgets, on public order, on accustomed ways of doing things." Physicians typically suppress their first suspicions. This slow curve of recognition is juxtaposed against the typically steep biological curve of the onset of epidemic disease ensuring that any civic response will probably be too little too late. However, there have been periods when city governments responded rather quickly to the threat of epidemic. Magistrates in certain Italian city-states more than five centuries before the Portsmouth experience were experienced in coping with epidemics by establishing quarantines, organizing burials and food deliveries and passing regulations for behavior in times of plague although other cities in northern Europe and Muslim locales demonstrated lesser abilities in organizing anti-epidemic measures (McNeill, pp. 186-9). A number of European cities developed sophisticated anti-epidemic systems in response to the bubonic plague that devastated the continent in the late medieval and early modern periods. In fact, they laid down the public health principles, e.g., quarantine and isolation of victims, that still governed public policy when the epidemic under study occurred. For these cities, however, responses to plague strengthened and extended the power of the state, and city magistrates, although sending their families away, usually remained at their posts (Slack, 1991).

In the short term, this was not true of the Portsmouth experience. The government ceased to exist as Common Councilmen fled. However, some Italian Renaissance cities passed through an interim stage of convening ad hoc committees in

69 The fatalistic attitude demonstrated by Muslim areas in the face of epidemic reflected their belief that such events were sent by God as a mercy. For Christians, plagues were seen as a punishment for sin and an opportunity to act to root out sin (and the sinful) from the community (Slack, p. 116).

70 The practice of isolation was developed as a means to contain the spread of leprosy in Europe from the 12th to the 14th centuries. Quarantines per se were a response to the bubonic plague of the 14th century. Quarantine was the practice originated in Venice of isolating vessels incoming from plague areas. Ships suspected of carrying infection were prevented from offloading passengers, crew, or cargo for 30 and later for 40 days – thus the term quarantenaria, later anglicized to "quarantine" (Duffy, 1990, p. 7).
time of epidemic to bear responsibility for caring for the sick and destitute and burying the dead. In time, these committees became standing boards of health (Hays, 2000, p. 132). This scenario was largely followed by the town of Portsmouth. In the years immediately following the epidemic, the government did extend its authority and its police powers in an attempt to prevent another epidemic. These changes indeed accompanied a general increase in municipal authority and professionalism in administration that led to the town’s incorporation as a city.

There is also the issue of the degree of private involvement. In Philadelphia, as later in Portsmouth, the city was virtually run by volunteers during the epidemic. But in the Baltimore epidemic of 1800, the municipal government made vigorous efforts to address the needs of the population with volunteers restricted to a role assisting in locating those who required public assistance (Stickle 1979). Portsmouth clearly followed the Philadelphia model.

As noted earlier, the Common Council’s response to the epidemic was to appoint a Sanitary Committee to manage it. This Committee posted a notice on the 24th of July.

For the purpose of allaying the general alarm, the Sanitary committee appointed by a special meeting of the Common Council held on the twentieth inst. have determined to report daily the state of the prevailing epidemic.

They request all the physicians to make up a report of their cases to sunset of each day, and have it at the Dispensary, No. 77 High Street, directed to the Sanitary Committee.

From the returns of three physicians, there are under treatment at sunset on the 23rd, eighteen cases. Up to the present time there have been eight deaths only. The disease is principally confined to Gosport, there being only a few cases in other parts of town, and they originated in Gosport (Report of the Portsmouth Relief Association, p. 124).
Other than dismissing the number of deaths, the notice reassures the public that the disease is confined to Gosport. Also of interest is the directive requiring case reports from physicians – a fledgling bureaucratic requirement.

As government failed, a voluntary association assumed quasi-official functions. The Portsmouth Relief Association consisted of seven men, nearly all of whom held “official relations to the municipal affairs of the town.” It was this body that “undertook the management of matters” (Report of the Portsmouth Relief Association, 1856, p. 9). The Association established methods for obtaining and distributing supplies, for caring for the sick, burying the dead, and for the long-term care of children who had lost their parents during the epidemic. The town was districted into wards with committees appointed to each ward to seek out “the sick and the destitute” (Report of the Portsmouth Relief Association, p. 13). The scenes that greeted these committees could be horrific and frustrating. Chisholm (cited in Emmerson, 1944, p. 224) describes a scene in which a woman, left at home when her dying husband was taken to the hospital, was found dead of the fever herself during a later visit.

A physician was assigned to each district (“From Portsmouth”, 1855, August 31). To supply food and clothing, the Association rented stores, distributed the goods it received to them, and employed people as storekeepers. The organization also supplied “dietetics and cordials” on physicians’ requisitions. With some difficulty, the Association procured wagons and drivers to convey patients to the Naval Hospital. With all hotels being closed, the Association also found it necessary to secure quarters for the many volunteers who came to help. Most importantly, the Association comprised a unitary organization that could utilize the $85,000 in contributions to procure and distribute food and medicines, to support volunteers, and provide, as best as possible, for the needs of a sick, isolated population. Ten thousand dollars alone was spent to bury more than 700 bodies (Report of the Portsmouth Relief Association, 1856, pp. 13, 69, 194-9).

Orphans were a particular problem. Holladay (1936) reports that there were nearly 400 children who had lost at least one parent during the epidemic. Orphans were at first housed at the Naval Hospital. Then the Association opened a temporary orphanage.
staffed by the Sisters of Charity in one of the town schools. As the situation worsened, both the cities of Richmond and Baltimore offered to care for the orphans. They were, in the end, sent to Richmond (Report of the Portsmouth Relief Association, 1856, p. 14).

The role of the churches in Portsmouth during the epidemic is not clear. Certainly Father Devlin, the only Roman Catholic priest in the town, stayed, cooperated with the Relief Committee, and performed heroically in ministering to his congregation. There were reports on both sides of the water that some Protestant ministers had deserted their churches and fled the area, but that was not true of all. A Norfolk minister noted that seven of the ten ministers in that city had remained and that the others had good reasons for leaving (Armstrong).

Portsmouth (and Norfolk) clearly could not muster the resources to cope with the epidemic alone. With all normal government and commerce shut down, relief from outside the city became a literal lifeline. One of the first groups to respond was the Sisters of Charity. The Sisters, founded in America in 1707, had a reputation for coming into epidemic areas when other nurses were fleeing (Nelson, 2001, pp. 35, 40). They had first come to Norfolk in 1836 (Ledger Dispatch May 12, 1956). Through a connection with St. Patrick’s church in Norfolk, the Sisters sent nurses to both cities (Forrest, 1856, p. 169). Three came from the mother house in Emmitsburg, Maryland to serve in the Naval Hospital (Holcomb, 1930, p. 266; Nelson, p. 41).\footnote{Others from the order came from Baltimore to serve in Norfolk. Their service led to the founding of the Hospital of St. Vincent de Paul in that city the following year (Nelson, p. 41).} Other cities, many of them all too familiar with the visitations of yellow fever, generously responded to requests for assistance. Baltimore, Richmond, New York and, most notably, Philadelphia, sent provisions and money to the voluntary associations of both cities to carry out their relief activities (Forrest, 1856, pp, 176-83). Many cities also sent personnel to care for yellow fever victims. In all, 87 physicians and more than 150 nurses came from other locales (mainly along the eastern seaboard) to serve during the epidemic (Blanton, 1933, p. 236). Cities all along the eastern seaboard sent money and goods. But cities were not alone in their response. Hundreds of individuals sent money and provisions to help the
beleaguered towns. "Ladies" sent clothes for the children. A man in Nansemond County sent five lambs "to be slaughtered and distributed among the needy of Portsmouth." An anonymous donor who had given a "small contribution to Norfolk" also sent a "small amount" to Portsmouth (Report of the Portsmouth Relief Association, 1856, pp. 214-25).\(^2\) Shipyard workers in other cities contributed to their "brother mechanics and others" (Report of the Portsmouth Relief Association, 1856, p. 226). Churches and lodges sent money. Collections were made by university students and among children for the orphans of the town. Medical, homeopathic and botanic physicians and a number of nurses offered their services. The Tuscarora tribe contributed $25 to be divided between Norfolk and Portsmouth. The Catholic College grounds in Richmond were offered for care of the sick from both cities. Purveyors of patent medicines offered their tonics without charge or for a voluntary contribution (Report of the Portsmouth Relief Association, 1856, pp. 227-343).

Physicians, nurses and others traveled into the epidemic area to assist although there is some disagreement as to their number and mortality rates. Forrest (1856, pp. 250-3) lists no fewer than 107 physicians who came to the two cities during the epidemic. Of these, he states, 24 served principally in Portsmouth where they were said to suffer a mortality rate of 20 percent. (Twenty four percent of the physicians who served in Norfolk also died.) Holladay (1936) reports that 28 volunteer physicians served in Portsmouth with eight deaths among them. The Report of the Portsmouth Relief Association (1856, p. 206) lists 27 volunteer physicians who worked in Portsmouth with seven deaths.

The best documented effort to assist the two cities was that of Philadelphia. That city, no stranger to yellow fever, called a town meeting August 16\(^{th}\) "to adopt measures for the relief of the Poor of Norfolk, Portsmouth and Gosport, Virginia, now suffering under the ravages of the Yellow Fever..." (Report of the Philadelphia Relief Committee, 1856, p. 6). At that meeting, 50 citizens were formed into block committees for the

\(^2\) The practice of earmarking part of a single donation for Portsmouth and part for Norfolk was not uncommon.
purpose of raising relief funds. These funds were to be remitted daily to the relief committees in Portsmouth and Norfolk. Notices were published in the Philadelphia newspapers noting that it was the poor who remained in the two cities. In fact, the cities were described as “poor” as well as “unused to the fever.” There was an appeal to civic pride—to the “philanthropy that ever distinguishes this community” as well as to the fact that a nearby city, Baltimore, was active in supplying provisions to Portsmouth and Norfolk. In a week, more than $30,000 was collected. By mid-October, that sum had risen to $46,000—the largest sum ever to be raised in Philadelphia for such a cause. (Additional funds, approximately $20,000, came from other Pennsylvania cities.) But Philadelphia did not supply only money. Thirty Philadelphia physicians, nurses and druggists went to Portsmouth to assist in the epidemic. (Approximately an equal number served in Norfolk.) It was reported that eight of them died there. (Seven volunteers were thought to have died in Norfolk (Report of the Philadelphia Relief Committee, 1856, pp. 10-3, 16-7, 22). Included in the Portsmouth volunteers who survived was Miss Lucy Patterson, an eighteen-year-old recent convert to Roman Catholicism. Although the Committee initially refused her permission to travel to the epidemic area, she persisted and went, claiming she had the right to go “because she intends to devote her life to religion and charity.” Thomas Webster, the head of the committee was moved to write to three priests to “remonstrate with her against going,’ then to the mayor of Portsmouth to “watch over her.” In the end, Mr. Webster capitulated. Through her priest, he provided her with passes and funds for incidental expenses (Report of the Philadelphia Relief Committee, 1856, pp. 96-8).

Although many cities, not surprisingly, attempted to close their borders to refugees from the epidemic, Northampton, Matthews and Accomac counties welcomed visitors from the epidemic area (Report of the Portsmouth Relief Association, 1856, p. 132). Petersburg took steps to establish a quarantine as early as August 2nd. At the same time, Richmond sent two physicians to Norfolk with an eye to “protecting this city [Richmond] against contagious diseases which might be brought here by infected persons (“Yellow Fever in Norfolk and Gosport,” 1855, August 3). Nearby Hampton required that persons
desiring to enter that town were to produce certificates to the effect that they were not residents of the epidemic area ("Yellow Fever in Norfolk and Portsmouth," 1855, August 9). The city of Baltimore, although it contributed generously to relief efforts, early on took very severe measures to ensure that no infected persons reached that port. When the disease became epidemic in Portsmouth, a physician was despatched from Baltimore to inspect every ship about to leave the port of Norfolk for Baltimore. A committee of Portsmouth citizens was employed to identify other Portsmouth residents so that the doctor could refuse them passage. Some Norfolk residents easily bypassed such precautions by taking a morning boat to the welcoming Eastern Shore counties, then boarding a boat departing for Baltimore from there (Armstrong).

Other locales sent fleeing Portsmouth residents back to their homes. A ship loaded with 200 escaping passengers was refused admission to both Old Point Comfort and Fortress Monroe, and was obliged to turn back ("The Infected Ports," 1855, August 8). In fact, the ship was met at Old Point Comfort by armed sentinels who precluded its landing at bayonet point (Report of the Portsmouth Relief Association, 1856, p. 131). Richmond passed an ordinance instituting a quarantine against vessels arriving from Norfolk and Portsmouth on August 9th ("City Council," 1855, August 10) which was lifted during the third week in August ("The Quarantine," 1855, August 27). In fact, Norfolk and Portsmouth both had quarantines, one against the other ("The Quarantine," 1855, August 27). By the 14th of August, it was reported that a citizen could leave Portsmouth only with "the greatest difficulty" ("Yellow Fever at Norfolk and Portsmouth," 1855, August 14).

The combination of flight and quarantine established the population for which the Association was responsible. Their numbers are noted elsewhere in this paper. In the end, the Association became responsible for almost all aspects of civic life. All outside contributions passed through Association hands. All supplies, to sustain life, to care for the sick and to bury the dead came from the Association. Other organizations—schools, churches, clubs, and, above all, the government, disappeared. The Association served as not only an organization, but the organization that maintained the fabric of the town in its
Aftermath in Portsmouth

On the sixth of November, the Common Council resumed their sessions. (The last meeting had been August 7th.) They were most interested in returning to business as usual. They quickly attended to the filling of vacancies left by the epidemic and, indeed, life did go on as evidenced by the gradually increasing attention to mundane matters. But the catastrophe haunted them for years following. At first, it was a matter of calling for a public meeting (later changed to a motion of thanks) as a manifestation of “gratitude of the people towards the noble and generous action of our numerous friends in relation to the late epidemic” (Minutes of the Portsmouth Common Council. 11/12/55). They also resolved to wear the “usual badge of mourning “for 30 days as a symbol of respect for two dead Council members. (The two had stayed to help. The Council had 13 members. Had all remained in the town, they would doubtless have been mourning additional members.) Money was voted for the police who had been “deprived of their usual fees” during the epidemic (Minutes of the Portsmouth Common Council. 11/12/55, 12/4/55).

Some time in early December, a special meeting was held in Dr. Schoolfield’s office to deal with the question of the orphans of the epidemic. Most of them were still being sheltered in Richmond. It was resolved to send a committee to travel to Richmond to make further arrangements for them there until “provision could be made for them at home.” By mid-month, the committee had completed their report on the 45 children with a careful listing of names (many were siblings), ages (10 months to 15 years) and dispositions. Most had been taken in by relatives and several were being adopted. In January, they offered a more detailed report and decided the expenses for their trip ($55.75) should be paid by funds from the Portsmouth Relief Association. It was at this meeting that the leading spirit of the Association, Dr. Schoolfield, resigned from the

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73 The role of the police during the epidemic is not clear. The appropriation of funds for their services implies that at least some of them stayed. In normal times, a mainstay of police fees was for the killing and burial of dogs. Presumably, the dogs were safe while the epidemic raged.
Council and announced his departure from Portsmouth. He received a tribute in the minutes for “his conspicuous and noble sacrifices and services during the dark and desolating period of the late pestilence” (Minutes of the Portsmouth Common Council, 1/1/56).

After that, attention returned to the report on the budget. Thanks to the monies and the actions of the Portsmouth Relief Association and the presence of the Naval Hospital, the town government escaped not only having to govern during the epidemic, but also having to pay for it. The budget report for 1855 made no mention at all of the epidemic. Indeed, the only direct municipal expenses for the epidemic were the $1500 later voted to pay for medals of honor struck to honor the physicians of the Naval Hospital. The Council itself noted that the report was “good” and indeed the interest on the town debt had lessened to forty percent of revenues. There were, of course, less obvious costs associated with the pestilence. Substantial sums were appropriated in the following years for public health measures designed to avoid another outbreak of yellow fever.

The first of these, after a committee report on “cleansing the streets and lots of the town” was the appointment of a Town Inspector with full powers to investigate the condition of any and every lot, cellar, outhouse, alley, wharf, dock or street; to receive complaints and remove, abate, or cause to be removed or abated, any nuisance complained of; to prohibit the creation of Hog Pens within the limits of the town; to cause the beef and fish markets to be kept constantly cleaned, and to do all other acts necessary to the perfect cleansing of the Town; to enforce such penalties and carry out such orders as he may receive from the Town Council or the Board of Health (Minutes of the Portsmouth Common Council. 1/11/56).74

74 This is the first mention of a Board of Health. Such a board did not yet exist in Portsmouth and was not, in fact, created until later.
The town was to be divided into districts with a warden in each to register complaints. One or more garbage carts were to be used to remove “all filth, offal or other matter” in front of any house by order of the Inspector” (Minutes of the Portsmouth Common Council. 1/11/56). At a later meeting, an ordinance was presented to make the position full time, paying $50 per month. The Inspector was given the authority to use force and to bill property owners for street obstructions. Early in the year, a committee was appointed to audit the records of the Portsmouth Relief Association (at the request of the Association treasurer, a member of the Common Council). In March the audit was completed with the committee reporting that the Association had collected $85,320.63 and spent $80,270.02 leaving a balance of $5050.61. The extra funds were dedicated to care for the orphans of the epidemic. Those who had sheltered them were to be paid and the Relief Association was instructed to erect and endow an orphan asylum.

In February, the motion of thanks to those who had assisted was passed in a more detailed form. It included mention of the “benevolent people of Maine, New Hampshire, Massachusetts, Rode island [sic], Connecticut, New York, New Jersey, Pennsylvania, Delaware, the District of Columbia, Maryland, Virginia, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Louisiana, Florida, Texas, Kentucky, Indiana, Wisconsin and to “benevolent and zealous men who composed the several relief committees within their borders—to all the churches, to their Humane Associations, Societies and fraternities, and public works and work shops.” The Council also thanked the railroads and steamboats that had conveyed the doctors and nurses free of charge. Specific vessels, the Saranac, the Michigan, the Hetzel and the Savannah were also thanked. There was specific mention of doctors, nurses and ministers of the gospel and four men, one each from Philadelphia, Baltimore, Richmond and Petersburg for sending provisions. They mentioned the “noble” women, the Sisters of Mercy and the Sisters of Charity, and thanked the cities of New York, Baltimore, Philadelphia and Richmond for their support of orphans. Nor were federal officials, the Secretary of the Navy, and the Chief of the Board of Medicine and Surgery for the Naval Hospital and the Commander of the Naval Station, his officers and his men, forgotten.
For most, expressions of gratitude would have to suffice. The striking of six gold medals at a cost to the town of $1500 (approximately ten percent of the town’s discretionary income) for the physicians at the Naval Hospital was ordered, and the Council approved the design of the Portsmouth Relief Association for a monument for the graves of the doctors and nurses who came into the town and died during the epidemic. There is no record of the monument having been built and in January, 1859, the remains of a number of Philadelphians who had died in the epidemic in both Portsmouth and Norfolk were disinterred and, with great ceremony, were placed aboard a steamer to be returned to their native city (The Southern Argus, 1859).

As the weather warmed, the fears of the Council members that summer would bring another disaster became apparent. The first hint that public health would become a medical responsibility came during an April meeting when a report of physicians was received on the “most filthy condition” in the market house. The report had not been initiated by the physicians, nor by the Council, but prepared rather at the request of the Town Inspector. The report, signed by three local physicians, noted that building used for the sale of meat was in “comparatively good condition”, that it should be sprinkled with lime and kept open. The Fish Market, full of decomposing fish, was another matter. It was to be closed, the walls were to be removed for ventilation and the market was to be used for sales only. A group of buildings known as Talbot’s Row and surrounding lots were found to be in a “condition highly favourable for the production of a most malignant form of disease, moisture abundant requiring only the heat of a summer sun, to generate a most virulent malaria.” The physicians recommended a liberal use of lime on the lots to “cover up entirely all offensive matter.” The attached cellars, “excessively wet and filthy”, were to be drained (Minutes of the Portsmouth Common Council, 4/28/56).

The report went on to recommend that all citizens renovate their cellars and sinks, draining, filling in and liming them as “we are now on the eve of warm weather, when unless the above sanitary regulations are observed, effluvia prejudicial to the health of the Town, will be engendered, which may, possibly, occasion another alarming panic in our midst.” Heat, moisture and decomposition were named as “the three great causes of
disease” and warnings were given concerning animal and vegetable decomposition during the summer.

The mayor, stating that he was required to bring to the Council’s attention “anything affecting the public welfare,” reported at the next meeting that they had been taught a lesson and recommended grading and filling various sites to prevent “the slow and deleterious process of evaporation.” His recommendation to increase the duties of the Town Inspector and give him more power was referred to committee. A stable in Gosport was declared to be a “nuisance” and was to be removed. The Council reviewed a petition from citizens living near the Market House that the House be left open for ventilation. And it was determined that the President of the Council should apply to the Norfolk County Court for permission for the town of Portsmouth to establish its own quarantine grounds. Not surprisingly, this request later caused a jurisdictional problem with the Norfolk Board of Health which operated its own quarantine grounds. The problem was finally referred to the State’s Attorney. The motivation for a Portsmouth quarantine ground is not clear. It can be speculated that the Council had gained information concerning an investigative report to be published the following year that damned the captain of the Ben Franklin for lying to the Norfolk quarantine officer.

According to letters sent by the ship’s engineer to a committee of physicians, the ship was exposed to a particularly virulent epidemic in St. Thomas during a lengthy layover and three cases and two deaths from yellow fever occurred during the voyage. This was confirmed by a passenger on the ship who had spent a number of years in the West Indies and knew the disease well. Moreover, a member of the crew lay dying from yellow fever at the Norfolk marine hospital even as the Ben Franklin first lay at anchor in the quarantine grounds. There were apparently two other cases of yellow fever in the

75 Livestock seemed to be common in Gosport. Later in the year, the Council granted a request from the Methodist Episcopal Church in Gosport to erect a fence to keep out cattle. But other areas of the town had problems with animals also. In August, 1857, the Council ordered that hogs and goats belonging to persons residing in Norfolk County, but not in Portsmouth, were to be rounded up and sold within five days if not claimed by their owners. Later that same year, there was a report of “hogs running at large.”
ship's crew before that of the boiler repairman and additional cases after the ship was sent back to the quarantine grounds. Additionally, there was a report of two men who boarded the ship in quarantine, stayed overnight and sickened and died of yellow fever. (This was reported by Dr. Schoolfield.) While that may have been the case, the fact that both these victims were black raises suspicions. Given the low mortality rate of the disease in African-Americans, it seems unlikely that both would die of the disease (Report on the Origin of the Yellow Fever in Norfolk during the Summer of 1855). Certainly any leak of this kind of information would dampen faith in the Norfolk quarantine procedures.

As the year wore on, the Council continued acting to prevent another epidemic. The walls of the Market House were indeed removed (from April to October). Most important, in July (Minutes of the Portsmouth Common Council, 7/1/56), a Board of Health was finally established. The Board was to consist of Portsmouth citizens (in practice, white males) and was to meet every week from March to November and every two weeks the remainder of the year. In a short-lived ordinance (stricken at the end of July) that was certain to occasion competition with the Town Inspector, the Board was to "inspect all parts of the town" every week and report nuisances to the mayor. They were given authority to enter houses and enclosures, inspect and order abatement of various problems. Fines were to be levied against offenders. A physician was to be elected annually as Health Officer "to provide against the introduction and spreading of infectious and pestilential diseases as hereinafter directed." The Health Officer was

required to visit all vessels coming from any place, from which the Board of Health

76 In this action, the Council was following an established tradition. Boards of Health were commonly established after epidemics in American cities. The very first such board was established by the city of Philadelphia after its 1793 experience (Tobey, 1930, pp. 74, 77). In the south, the Boards of Health were civic rather than state-based. Their activities, even their existences, waxed and waned with the occurrence of urban epidemics (Humphreys, 1992, p. 47). The great yellow fever epidemic of 1878 occasioned the formation of a National Board of Health (Tobey, 1930, pp. 74,77). The Report of the Portsmouth Relief Association (pp. 184-5) also recommended the creation of a Board of Health although the authors also predicted that there was very little possibility of the return of the pestilence.

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shall deem it possible that a contagious or pestilential disease might be introduced, and to detain the same when necessary, and the Quarantine Ground for the town of Portsmouth, which shall be with the assent of the County Court of Norfolk...

Ships having on board any person with contagious disease, any person who died on the voyage of contagious disease, or coming from a sickly port or place without clean bills of health were to come to the Quarantine Grounds and fly the traditional oblong yellow quarantine flag. Goods or infected persons from these ships were not to be off-loaded without the Health Officer’s approval. Persons leaving vessels illegally were to be detained by force. Vessel captains were required to pay $2.00 (later raised to $5.00) for the inspection.

Penalties consisted of a schedule of fines – for the masters of vessels, for pilots who failed to conduct vessels to the Quarantine Grounds, for persons boarding the affected ships without permission. Ships arriving having damaged cargo and arriving between May and November, and any ships thought to be infected were to be “purified”.

By August, the Council realized the problems occasioned by investing the Town Inspector and the Board of Health with identical duties and power. The office of Inspector was essentially folded into the Board of Health with both the Inspector and the Health Officer becoming executive officers of that body. Over the long term, this solution proved wanting. In December of the following year, the entire Board resigned over a dispute with the Inspector. The Board won, and the ordinance was re-written stating that the Town Inspector was required to obey all orders from the Board. That was not enough for the Board members who resigned again. The Council refused to accept their resignations. The matter was finally settled by giving the Board the authority to hire and fire the Town Inspector and to have him serve on a month-to-month basis.

77 The process of purification, though apparently clear to members of the Council, are not so clear to us. Generally, such measures included ventilation, general cleaning, removal of decomposing matter, removal and/or cleaning of bedding and clothing, and the laying down of lime.
By September, 1856, the Council, no doubt much relieved that they had so far seen no yellow fever, but still wary, instituted a requirement for the town burying grounds to report deaths weekly to the Health Officer. Information on disease, age, sex, color and location of grave was required. In November, more health measures were taken. Bids were to be taken from private contractors for garbage removal. The Board of Health proposed that all docks should be dredged and a cart was given to the Town Inspector to be used during the winter.

After a number of meetings cancelled due to lack of a quorum, the Council once more turned its attention to health measures in February. The Board of Health declared the need for a pesthouse and proposed that the Health Officer should be salaried. In March, it was agreed that the Health Officer should receive $300 per year (including retroactive pay) and should be responsible for care in the pesthouse. The pesthouse which was leased by the town came under the authority of the Board of Health rather than the Health Officer when the latter resigned the following month. As to the pesthouse itself, a fee schedule was established. Patients were to pay $1.00 per day for medical attendance and $4.00 per week for medicines, nursing and food. Blacks could be admitted to the pesthouse with masters paying the fees for slaves and free blacks allowed to work their debt off either in the pesthouse itself or "upon the streets of the town" or "elsewhere in public work" (Minutes of the Portsmouth Common Council, 3/4/57).

Health concerns continued with the passage of the seasons. The Board of Health began to interact with the long-standing Committee on the Streets with regard to the streets' conditions. Some responsibilities that might previously have been the Committee's responsibility were now assumed by the Board. In July, the Board was authorized to "procure a trainload of dirt" and place it at the disposal of the Town Inspector and to "collect the amount of purchase money from sale of the same." Filling low places with dirt was considered a sanitary measure. One of these was apparently what the Board called the "ravine" of Effingham Street (Minutes of the Portsmouth Common Council, 9/1/57).

The following year, the Board took quick action concerning an apparently short-
lived smallpox threat. A single case was reported. The house in which the victim lived and the area in which the house was situated were quickly isolated, and a special committee was appointed to address the threat of an epidemic that never materialized.

Although we have emphasized the health-related activities of the Council, other town business continued apace. Railroad issues continued to appear on the agenda. The new gas lighting was found to be insufficient. More fire wardens were appointed and rewards were posted for arsonists. The public cemetery was improved. Bids were accepted to build a new Market House and later, plans were made for a new firehouse. Problems in policing the town continued also. More power was given to the Mayor in regard to policing and reports of delinquent officers became his responsibility. In 1857, the police force stood at a captain and six watchmen. In September of that year, it was clear that problems with the police had not ended. A volunteer militia was contracted for $3000 to be the town guard (along with two daytime police officers). The militia apparently found police duty unaccommodating and broke the contract in about a month. And the police problems continued. The mayor reported that members of the night watch were found sleeping or at home when they were supposed to be on duty. They were disciplined with fines and reprimands. A hint of the coming storm came during the summer of 1857 when the Council gave permission (and funding of $250) to the Virginia Volunteers for a military encampment. The Volunteers’ petition spoke of being prepared to defend our rights...from foreign and domestic foe...to keep in awe and subjection our slaves who might (in the absence of such military force) be induced by a secret and insidious enemy to become insubordinate and to violate the laws of the Commonwealth (Minutes of the Portsmouth Common Council, 6/22/57).

The encampment was viewed by the Council as a tourist attraction.

The record of the Portsmouth Common Council in the years following the epidemic demonstrates a growing professionalization in governing. There is significant growth in committee work. The Council developed a routine procedure of having
sponsors announce ordinances they planned to introduce in advance giving Council members the opportunity to reflect before voting. The practice may also indicate less social communication between members, but it also allowed for greater transparency in municipal affairs. Public safety measures in terms of fire protection were increased and special attention was paid to police problems. The Council may not have been able to successfully address their difficulties with the police, but they were willing to grapple with the issue and implement creative solutions. The Council still occasionally failed to meet due to lack of a quorum, but, for the first time, fines were voted for members who failed to show up.

Duffy (1992) points out that the experiences of American cities with epidemics eventually convinced their citizens that the public health could not be left to volunteer groups. Cities needed to assume the responsibility for the development and implementation of quarantine and sanitation measures to prevent epidemics. The public health measures taken by the Portsmouth authorities serve as an example. The assumption of new public health responsibilities by the Common Council and the untangling of the authority needed to implement them provided special lessons in governance. Public health measures as intrusive as using wardens to report nuisances are usually resisted by the commercial interests of a municipality until a disaster occurs. Here, that had clearly happened, but, if there were protests, they did not find their way into the Council minutes. However, the Council had to work out the tricky questions of medical authority and police power common to public health endeavors as well as address the usual public policy dilemmas involved in realizing a necessity for action in the face of imperfect information. Their measures to prevent a recurrence of the calamity did not distinguish among competing theories of contagion, miasma, local or foreign origin. Like most municipalities of the time, Portsmouth employed a “shotgun” approach, hygienic measures for streets and buildings, quarantines to bar infection, and a pesthouse to limit it. Still, even with its increased attention to expertise, the town did not collect sufficient revenues to support additional activities such as the Board of Health and higher salaries for public officials. Banks were approached several times for substantial loans during the period. With
solvency still an issue only a year and a half after the epidemic, the Council requested that the mayor convene a town meeting to petition the Legislature to incorporate as a city. The process went speedily. Three months later, the Legislature approved the town’s issuance of bonds to replace the town scrip, and only a month after that, elections for new officers under incorporation were held. Incorporation did not proceed without a few bumps. Four Council meetings that month were not held due to lack of a quorum.

But of greatest interest to us is the seamless interaction with the Portsmouth Relief Association. The Association had arisen out of a failure of government, but once the crisis was over, the Association seemed to dissolve itself into the returning municipal administration. The Council took it upon itself to audit the Association records and to appropriate to itself the $5000 balance. Although it was the intention of the Association that the funds were to be spent on the orphans of the epidemic, it was seen as the Council’s decision that that be done.

Contemporary Perspectives on the Epidemiology of Yellow Fever

Those experiencing an epidemic usually seek to find an explanation of the event in terms that offer the possibility of control. Why do some survive and some not? We explain epidemics in terms of unprotected populations, vectors and epizootic reservoirs. Nineteenth century survivors explained the epidemic in terms of volition, responsibility and susceptibility. Bad, i.e. immoral behavior (e.g., intemperance) caused illness. Exposure to bad air caused illness. Alternatively, exposure to sick people caused illness. Incorrect living (e.g., dwelling in overcrowded, dirty tenements) caused illness. Being an outsider (e.g., not a southerner) caused illness. (The framework for the previous discussion may be found in Rosenberg, 1992, pp. 283-4.) Like many in our time, 19th century observers of epidemics tended to personalize disease. Disease “invaded”, “attacked”, “claimed victims” (Carrington, 1994 p. 9). The survivors of the Portsmouth yellow fever epidemic also spent considerable time in analyzing the possible causes of the pestilence. Their arguments revolved around the question of whether the steamer, Ben Franklin, had brought the fever or not. Forrest (1856, pp. 7-8, 35) argued strongly that, since both cities “had been
remarkably healthful for many years,” the disease must have been imported. He notes that
the first case announced was that of the boiler-maker employed on the ship, and that the
first twenty or thirty cases occurred within “a stone’s throw of the vessel.” He also argues
that the cities are “far beyond the latitude in which the fever is produced to any great
extent...” To say that the fever originated in Norfolk or Portsmouth would be to imply
that the cities were “unhealthy”—a position that Forrest clearly holds to be untrue.

In their report, The Philadelphia Relief Committee (1856, pp. 3-4) also pointed out
that the Portsmouth and Norfolk areas “have not been recently noted for any peculiar
unhealthiness” and that there had been no yellow fever epidemics in the area since 1821
(Report of the Philadelphia Relief Committee, 1856, pp. 24-5). In this judgment, the
Report’s authors reflected the standards of the day—standards that accepted high rates of
infant and young adult mortality as common. According to the 1850 Mortality Schedule
for the town of Portsmouth (Tables 1 and 2), 33 white deaths and 13 black deaths had
occurred in Portsmouth from June, 1849 to June, 1850 (the latest year prior to the
epidemic for which these statistics are available). Most deaths were the result of
infectious disease. Nine white deaths and one black death were due to consumption.
Infant deaths (death at one year of age or less) were common, occurring in 11 out of 33
white deaths and 5 of 13 black deaths—most commonly from infant colic. The average
age for death for whites was 22 years and for blacks 34 years. Even while taking the
probability of significant error into account, these figures suggest a population that was
not ready to assume an additional disease burden.
<table>
<thead>
<tr>
<th>AGE AT DEATH</th>
<th>WHITE</th>
<th>BLACK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 year or less</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>2 years</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3 years</td>
<td>1</td>
<td></td>
</tr>
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<td>4 years</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>7 years</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>11 years</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>17 years</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>19 years</td>
<td></td>
<td>1</td>
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<tr>
<td>20 years</td>
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<td>30 years</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>33 years</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>37 years</td>
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<td>1</td>
</tr>
<tr>
<td>38 years</td>
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<td>2</td>
</tr>
<tr>
<td>46 years</td>
<td></td>
<td>1</td>
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<td>48 years</td>
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<td>50 years</td>
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<td>65 years</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>70 years</td>
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136
<table>
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<tr>
<th>Age</th>
<th>Count</th>
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</thead>
<tbody>
<tr>
<td>80 years</td>
<td>2</td>
</tr>
<tr>
<td>81 years</td>
<td>1</td>
</tr>
<tr>
<td>87 years</td>
<td>1</td>
</tr>
<tr>
<td>? years</td>
<td>1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>32</td>
</tr>
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**MEAN AGE AT DEATH**

<table>
<thead>
<tr>
<th>Sample 1</th>
<th>Sample 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>22.4 years</td>
<td>34.4 years</td>
</tr>
<tr>
<td>CAUSE OF DEATH</td>
<td>WHITE</td>
</tr>
<tr>
<td>----------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Abscess</td>
<td>1</td>
</tr>
<tr>
<td>Cholera</td>
<td>2</td>
</tr>
<tr>
<td>Chronic Gastritis</td>
<td>1</td>
</tr>
<tr>
<td>Congestive Fever</td>
<td>1</td>
</tr>
<tr>
<td>Consumption</td>
<td>9</td>
</tr>
<tr>
<td>Croup</td>
<td>1</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>1</td>
</tr>
<tr>
<td>Disease of the Heart</td>
<td>1</td>
</tr>
<tr>
<td>Dropsy</td>
<td>1</td>
</tr>
<tr>
<td>Infant Colic</td>
<td>8</td>
</tr>
<tr>
<td>Inflammation of Brain</td>
<td>1</td>
</tr>
<tr>
<td>Fever</td>
<td>1</td>
</tr>
<tr>
<td>Mania Potes</td>
<td>1</td>
</tr>
<tr>
<td>Marasmus</td>
<td></td>
</tr>
<tr>
<td>Pneumonia</td>
<td></td>
</tr>
<tr>
<td>Old Age</td>
<td></td>
</tr>
<tr>
<td>Sulfin Gangrene</td>
<td></td>
</tr>
<tr>
<td>Typhoid Fever</td>
<td>1</td>
</tr>
<tr>
<td>Unknown</td>
<td>3</td>
</tr>
<tr>
<td>TOTAL</td>
<td>33</td>
</tr>
</tbody>
</table>
In 21st century terms, the regular occurrence of so many deaths from infectious disease might imply that epidemic conditions were already present in Portsmouth even before the appearance of yellow fever. We hold AIDS to be an epidemic even though AIDS deaths (in America) have had nowhere near the impact demonstrated by 19th century infectious diseases considered non-epidemic at the time. Epidemics, to a great extent, are a matter of perception. The residents of 19th century New Orleans, often called the "necropolis of the south", accepted an extremely high degree of mortality (in fact, the highest mortality rate in the country even in non-epidemic times) as normal. The city's newspapers simply ignored the existence of disease until it became so overwhelming that their reportage was redundant (Carrington, 1994, pp. 33-4, 49).

Although there appear to be some discrepancies in the figures, the report to the Portsmouth Common Council (the town's elected governing body) in April, 1855 also demonstrated a pattern of high rates of deaths at a young age. Twenty three people were buried in Potter's Field. At the burying ground, 36 adults and 27 children were interred. The ages of death for the burial ground are found in Table 3.
### TABLE 3
BURIAL GROUND INTERMENTS IN PORTSMOUTH, VIRGINIA 1855

<table>
<thead>
<tr>
<th>AGE AT DEATH</th>
<th>NUMBER INTERRED</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1 year</td>
<td>18</td>
</tr>
<tr>
<td>1-20 years</td>
<td>10</td>
</tr>
<tr>
<td>20-40 years</td>
<td>3</td>
</tr>
<tr>
<td>40-50 years</td>
<td>6</td>
</tr>
<tr>
<td>50-74 years</td>
<td>17</td>
</tr>
<tr>
<td>TOTAL</td>
<td>54</td>
</tr>
</tbody>
</table>
The Committee also traced the onset of the epidemic to the Ben Franklin. However, they note that Dr. Schoolfield (a member of the Common Council and later of the Portsmouth Relief Association) had treated a case of yellow fever in Portsmouth on June 24th, nine days before the boiler repairman was diagnosed. The authors go on to a discussion of the local conditions thought to be necessary for the development of the "migratory" fever. Following the sanitarian principles popular at the time, the Committee described predisposing conditions as including "putrid masses of animal and vegetable filth," open sewers and damp cellars. High temperatures were also noted as a contributing factor (Report of the Philadelphia Relief Committee, 1856, pp. 24-5).

Although a resident of the area at the time, Schoolfield set forth his very strong opinion that yellow fever was, in fact, a local disease, not brought in by outsiders at all. He ascribed the origin of the disease in Portsmouth to:

- "the immense amount of vegetable matter [at the Page and Allen wharf], acted upon by water and extreme heat,"
- the filthy condition of Fish Row which made the residents "peculiarly susceptible to the influence of the malaria,"
- heavy rains in April and May followed by drought,
- calm to light southerly winds,
- a long period of "continuously low tides," and
- extreme heat in July and August.

The heat, the drought, and the low tides were of particular importance since the "effluvia" that caused the disease was "exhaled" from mud (Report of the Portsmouth Relief Association, 1856, p. 118). In the light of how important the influences of heat and water were considered to be, it is surprising that Dr. Schoolfield made no mention of the marshes that cut up the back section of the town (Report on the Origin of the Yellow Fever in Norfolk during the Summer of 1855). However, Schoolfield is not slow to emphasize that the "filthy and disgusting" conditions of the overcrowded Irish
neighborhood in Gosport (Fish Row, Leigh's Row) were well calculated to feed a pestilence if not to breed one. Citizens of Norfolk also blamed residents of Fish/Leigh's Row for bringing the epidemic to their city by fleeing to their kinsman's neighborhood of Barry's Row in that city (Armstrong). The Committee of Physicians who reported on the epidemic in Norfolk, though blaming the Ben Franklin for the sickness, strongly advised that in the case of another epidemic, the city should

remove all persons sick of yellow fever as far as possible from a crowded city population, and especially from that of the laboring Irish, who now abound in Norfolk (Report on the Origin of the Yellow Fever in Norfolk during the Summer of 1855, 1857).

Although he disagreed with Schoolfield concerning the presence of unusual climatic conditions, Armstrong (a contemporary Norfolk clergyman) also analyzed the possible causes of the epidemic in terms of weather, giving special attention to wind conditions. He identified the points of origin for the epidemic (for both Norfolk and Portsmouth) as the Page and Allen Shipyard, the case diagnosed by Dr. Schoolfield June 24th and Barry's Row, the Irish section of Norfolk, noting that joining these points yielded an equilateral triangle. Then, he declared that the summer's prevailing winds had followed a course that bisected the triangle south to north. Armstrong leaves it to the reader's imagination as to the import of the wind direction. However, he comes down strongly on the side of yellow fever being of local origin, citing the case of an infected ship that had moored in the harbor in 1854 without sparking an epidemic as well as the fact that those fleeing from the epidemic area did not occasion epidemics in their destinations. Perhaps most striking in his analysis is his agreement with a remark by William Fergusson, a Scottish physician with 20 years experience in the West Indies, that yellow fever is "a concomitant of the old slave trade."

Holcomb (1930, p. 269) states that, although there was at first an inclination in both cities to connect the disease with the visit of the Ben Franklin, "afterward and little
by little, the conviction grew that there was some other cause.” However, his only
evidence for this statement lies in the work of Dr. Schoolfield – a work contemporary with
the epidemic itself. Holcomb (p. 272), writing with full knowledge of the role of the
mosquito as vector is of the opinion that “the Ben Franklin had all to do with it.”
Certainly the visit of the ship must be regarded with a high index of suspicion.

A number of physicians also raised the possibility of the presence of yellow fever in
the Portsmouth area earlier than July 8th. Williman (1856) maintained that a crewman (or
possibly a passenger) from the ship had been admitted to the Marine Hospital in Norfolk
for treatment for yellow fever June 21st. Dr. Schoolfield, a member of the Common
Council, attended a case of yellow fever about one mile from Portsmouth as early as June
24th. Holcomb reports this case as being within sight of the Ben Franklin’s anchorage and
Armstrong reports the patient as having been bedridden for months and therefore unlikely
to have been infected away from her home. A certain Dr. Trugien was called to see three
cases of yellow fever near the Page and Allen’s wharf on June 30th. One of the persons
who nursed these cases was, herself, diagnosed with yellow fever only a week later
(Report of the Portsmouth Relief Association, 1856, pp. 120, 122-3). Williman (p. 170)
reported that between the first and the tenth of July, inhabitants of Lee’s Row (or Leigh’s
Row), a tenement inhabited by Irish immigrants and located just opposite the Page and
Allen Shipyard in Gosport, became ill. From here, he states, “in various radiating lines,
the progress of the epidemic can be traced...” Schoolfield also reported the presence of
the disease on Leigh’s Row at the same time that the boiler repairman was ill (Report of
the Portsmouth Relief Association, p. 123), and Holcomb (p. 257) reports the deaths of
two men who boarded the Ben Franklin to deliver wood. Duffy (1966 p. 11) suggests
that in New Orleans, physicians identifying an early case of yellow fever were liable to be
denounced for “needlessly arousing public apprehension.” Perhaps this kind of fear kept
local physicians from reporting the earlier cases and the boiler repairman constituted a
threshold beyond which they were unwilling to keep silent. It is also possible that the
naval physicians were called to examine this particular case to lend credibility to the
diagnosis. These physicians had had experience with the disease which can be difficult to
diagnose in its early stages (www.sho.int/inf-fs/en/fact100html). Additionally, military physicians had little to fear from any possible wrath of the Common Council. There may be another factor at work here – that of “otherness.” It was believed at the time that southerners were inured to yellow fever – that “outsiders” were the population at risk.

The June 24th case was a woman who had recently moved to Virginia from New Jersey (Report of the Portsmouth Relief Association, pp. 120-1). The Gosport cases occurred among Irish immigrants. The boiler repairman, however, was southern. He came from Richmond.

With regard to yellow fever, configuration, contagion and predisposition were all thought to play a part by the physicians of the time – although there was considerable disagreement as to the relative importance of each. Moreover, the theories tended to become intertwined in their application. The belief that “outsiders” were more likely to contract the disease mirrored the susceptibility point of view. But Dr. Schoolfield’s thoughts concerning the capacity of outsiders (the Irish) to enhance contagion by their environmental conditions and the environmental conditions themselves to cause the epidemic demonstrate the contemporary difficulties in sorting out etiologies. In any case, by mid-century, there was some understanding that yellow fever seemed to be transportable, particularly by ships arriving from infected areas (Rosenberg, 1992). In their report on the yellow fever epidemic in Norfolk, a Committee of Physicians came down firmly on the side of those who believed the disease had arrived at the port aboard the Ben Franklin. Indeed, they specifically addressed the case that Dr. Schoolfield had attended June 24th. While agreeing with his diagnosis, the Committee denied that the malaria (bad air) arising from the marshes near her home could have been responsible. They noted that the quarantine grounds where the infected ship had anchored were only a mile from the house and that malaria blown from the ship had caused the infection – a plausible theory considering that a case of the disease had occurred in the same house in 1854 when another infected ship, the Chimere, had lain at anchor at the same location. Like Dr. Schoolfield, they noted the presence of the disease in Gosport in late June, but unlike him, they ascribed those cases to their proximity (about 100 yards) to the
quarantined ship (Report on the Origin of the Yellow Fever in Norfolk during the Summer of 1855, 1857). Armstrong (1856), an educated layman, demonstrates a number of common medical beliefs of the time in his memoir of the epidemic in Norfolk. These included the notion that the cause was a type of poison (and therefore not contagious), that there could be a “scattering” of cases not leading to an epidemic, that the disease was transportable (a “traveling epidemic”), that the fever could be of a “mild and manageable” or “malignant” type, that Norfolk was clean and therefore healthy, that deaths could be caused by “imprudent” behavior. Not incidentally, he also points out the difficulties encountered by the first Norfolk physician to encounter the disease – the accusations that, on the one hand, he was not prompt enough in reporting the disease, and on the other hand, the implication that his diagnoses of the fever were imagined.

Portsmouth’s initial response to the epidemic followed a classic pattern described by Rosenberg (1992, pp. 280-287). First, the town was slow to recognize first that there was yellow fever present, then slow to acknowledge that an outbreak had become an epidemic. Although there was a degree of fear, there was no panic while the cases were confined to the Gosport area. Gosport was a discrete area connected to the town by a bridge. Moreover, Gosport residents were unlike the population of Portsmouth proper. Whether one subscribed to theories of contagion or miasma, isolating Gosport would seem to eliminate the threat to the more comfortable citizens of Portsmouth. Additionally, the fact that much of the population of Gosport (particularly the Irish) belonged to marginalized groups lessened concern about their fate. Mass flight did not begin until cases were clearly originating in Portsmouth itself. However, as the epidemic escalated, public responses to its progression based on contemporary theories of epidemic diseases were challenged and proved ineffectual.

Discussion

The Portsmouth yellow fever experience brings together many threads of antebellum life. Portsmouth was a town in a marginal economic condition located in a state in the same situation. At this distance in time, we can clearly recognize the racism,
sexism, and ethno-centrism that characterized its population’s relationships. Town
government might be generously characterized as semi-professional. The town leaders
addressed the crisis in terms of their own experience using the best science of the time.
The experience demonstrated a failure of government (unrecognized at the time) and the
success of a hastily assembled *ad hoc* group. In the epidemic’s aftermath, the Common
Council’s efforts to prevent another outbreak contributed to a growing professionalization
of government.

Changes in attitudes are more difficult to assess than ordinances passed by the
post-epidemic Common council; however, there is evidence to suggest that some attitudes
toward Irish immigrants may have softened in the wake of the crisis. Portsmouth residents
might have selected a number of factors to blame for the yellow fever visitation – the *Ben
Franklin*’s captain, the doctors who could do so little for them, the Council members who
fled the city. But the circumstance they came closest to blaming was the presence of the
Irish. In this, they were not unlike other Americans of the time. Irish immigrants, fleeing
from starvation in their homeland in great numbers, by mid-century had become objects of
derision and intolerance in their new land. Their desperate poverty set them apart and
their religion fed anti-papist bigotry. The extent of prejudice against the Irish in
Portsmouth is not clear, but across the water in Norfolk, the Know-Nothing party was a
political power (although the mayor was Catholic), and anti-Irish sentiment resulted in the
burning of Irish homes and businesses when the epidemic began there (Gaidmore).
The heroic actions of the Catholic clergy and especially of the Sisters of Charity in both
Portsmouth and Norfolk may have mitigated the anti-papist sentiment fueling the prejudice
against the Irish. The Know-Nothing senator Robert M.T. Hunter was quoted in the
*Washington Sentinel* after the epidemic.

But, fellow citizens, I went a little too far, when I said it was proposed to
proscribe Catholics from all offices in this country. There are some offices which
sons and daughters of the Church are still considered competent to discharge, I
mean the offices of Christian charity, of ministration of the sick. The Sisters of
Charity may enter yon pest-house, from whose dread portals the bravest and strongest man quails and shrinks; she may breathe there the breath of pestilence which walks abroad, in that mansion of misery, in order to minister to disease where it is most loathsome, and to relieve suffering where it is most helpless (Hunter, Editorial, Washington Sentinel. August 9, 1855 cited in Nelson p. 41)

Even with this change in sentiment, it seems hardly likely that Senator Hunter would have supported Catholic political ambitions, but he did at least credit a brave and selfless act.

With the cataclysm of the Civil War descending on the town so soon after the yellow fever experience, it is not feasible to judge any long term effects of the epidemic. We do know that the middle years of the 19th century marked the high point of yellow fever in the American south (Carrigan, 1994, p. 79). For the yellow fever capital, New Orleans, the occupation of the Civil War, which might have been expected to bring a flood of new victims, was actually a healthy experience. General Benjamin F. Butler, the first general of the occupying forces, cleaned up the streets and instituted a rigorous quarantine. Although some of the city’s citizens prayed for yellow fever to return to ravage their conquerors, the army’s public health measures held and few cases of the fever were reported (Carrigan, 1994, pp. 82-9). The epidemic of 1878 which traveled up the Mississippi was so devastating as to cause the federal government to create a short-lived National Board of Health. The last American epidemic of yellow fever occurred in 1905 (Carrigan, 1994).
CONCLUSIONS

The Application of Systems Theory to the Portsmouth Epidemic Experience

The framework for this paper is systems theory as elaborated by Anderson and Carter. The basis of systems theory is the notion of parts and the whole and the interrelatedness of both. Anderson and Carter examine the theory as it relates to: cultures, communities, organizations, groups, families, and the person. The system is dynamic. At any time, each element of the system is interacting with other elements as well as with the whole system and external systems.

As noted above, our intent was to utilize systems theory as a framework for the examination of the events of the epidemic, realizing that the strengths of the theory (its comprehensive sweep, its promise of an organizational and explanatory model) must be tempered with an understanding that theories may constrain reality as much as explain it. That said, our initial research question asked whether systems theory as elucidated by Carter and Anderson could help us to understand the events of the epidemic.

A system is comprised of a number of elements: communities, organizations, groups, families and the person. As the research progressed, two major findings became evident. First, the system that was the town of Portsmouth altered as the stress of the epidemic changed its dynamics. The government disappeared. Families fled. Individuals were unable to care for themselves. Institutions such as churches fragmented. Borders closed. Commerce ceased. Second, as other system elements were diminished by the crisis, an organization (the Portsmouth Relief Association) arose, dominated the system and, in the end, preserved it. This focused the attention of the writer on the nature and activities of the Association.

Barton (1970, p. 38) has noted that social systems can be expected to maintain themselves in times of moderate change and stress. Indeed, the capacity to cope with stress would seem to be essential to any long-lived system. However, the speed of onset and the duration of the stress agent greatly affects the capacity of the system to respond successfully. Changes that occur without warning are more likely to create loss and vitiate the capacity to respond than those that give warning and allow time to prepare. Stresses
that are recurring or prolonged may allow the system to adapt, but may also drain its resources over time. A sudden, brief impact may have long-lasting effects, but recovery can proceed without additional crises (Barton, p. 40). Clearly, for Portsmouth, its experience with epidemic yellow fever was sudden and brief. Coming without warning, it did indeed destroy the existing system's capacity to respond. Families fled. Commerce ceased. Most important, the Portsmouth Common Council, the organization that might have been expected to mount a response, dissolved. In this, the Portsmouth system differed considerably from a city such as New Orleans where yellow fever was an expected epidemic experience and the government regularly contracted out for needed services.

Barton (p. 125) argues that when a disaster is sudden and occurs on a large scale, an emergency social system has to be formed. Like any other system, it must be organized to produce outputs. Seen from this perspective, it should then be expected that the organizational element in Anderson and Carter's description of a social system would become the dominant component in the system during the epidemic. And, indeed, that is what happened.

As described above, visitors to Portsmouth described a situation of social disintegration and lack of energy (entropy) during the epidemic. Anderson and Carter (p. 9) have described energy as the "capacity for action" or the "power to effect change." Operationally, energy consists of exchanges of both information and resources both internal and external to the system. During the epidemic, the Portsmouth Relief Association became the focus of the exchange of both information and resources (e.g., receiving communications from the outside, receiving donations, maintaining stores for distribution of goods), thus becoming the most effective force (perhaps the only effective force) for the maintenance of synergy (interaction among system components) in the system. Did the Association manage to maintain the town in a "steady state" as described by Anderson and Carter? It could be argued that indeed it did. During the epidemic, the system did not in fact collapse although it certainly did not function as usual. Cultural norms were, for the most part, maintained. Marginalized groups remained marginalized.

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White males continued to control the town. Although commerce as usual collapsed, necessary goods were delivered and distributed. Insofar as possible, certain social institutions did continue to function although in a distorted fashion. At least some clergy continued to see to their congregations. Thanks at least in part to the hardworking town gravedigger, bodies were buried in a reasonably timely manner if not in the customary fashion. Enabled by generous subsidies from the Relief Association, the Naval Hospital expanded its normal functions and assumed substantial responsibility for caring for some of the civilian population. More telling is the fact that the system quickly returned to its previous state once the emergency was over. The Common Council resumed its functions. Families returned. Commerce resumed. Social classes and norms remained unchanged.

The establishment of extreme physical system boundaries are a distinctive feature in epidemics. Nearby and even distant locales established quarantines in an attempt to contain the epidemic and the population thought to be carrying it in the circumscribed area of Portsmouth itself. Nonetheless, most of the population managed to flee. Traffic of all kinds that normally crossed the boundary into the town also became constricted. Desperately needed food and supplies slowed to a trickle. A limited number of volunteers became the town’s only visitors. The Relief Association had little control over those who left, but became the conduit for managing incoming people and goods. The Association dealt both with other organizations (e.g., the Howard Association in Norfolk, the Philadelphia Relief Committee) and with individuals who wished to contribute. However, in terms of dealing with internal groups, the Association’s activities appear to have been more personal (e.g., working with Father Devlin rather than the Catholic Church, personal hiring of drivers).

The Portsmouth Relief Association and the government of the town of Portsmouth meet the definition of an organization, i.e., they were goal-directed. Anderson and Carter’s description of systems theory allows us to see how organizations function within an intact system. It, therefore, contributes to our understanding of the nature of the town of Portsmouth and the nature of the government, particularly the organization of the
Common Council, at the start of the epidemic. What we see during the epidemic is a major insult to the system, a fall in energy level, and an increase in entropy. Using sources to supplement Anderson and Carter's description allows us to understand that an organization such as the Relief Association might be expected to be the element of the system that could dominate the system to address its new and overwhelming needs. With the end of the epidemic, the organization that had dominated the town disappeared, and the system re-knitted itself with the government resuming its place as an element in the system.

The theory gives us a workable analytic framework to examine the main events of the epidemic. For instance, it allows us to look specifically for such phenomena as energy exchange, boundary definition, system identity and autonomy. Carter and Anderson define a border as occurring when the intensity of energy one side is greater than the intensity of energy on the other side. This is somewhat confusing, but their meaning becomes clearer when they note that, if boundaries were completely open, there would be no way to distinguish between systems and that a completely closed system would cease to exist. One of the most striking examples of the change in boundaries during the epidemic came with the establishment of quarantines. This is a particular threat to any port city. Port cities live on the constant traffic between themselves and the outer world. The closing of this particular boundary will indeed cause the system to cease to exist. That may well have happened to Portsmouth except for the extraordinary efforts of the Portsmouth Relief Association within the town and the many outside organizations, communities and individuals that came to the town's assistance. As documented in their Report, members of the Association were in daily communication with those who were supplying them with provisions and personnel. Although port traffic ceased, arrangements were made to allow the steamship Coffee to carry in supplies. The boundary between Portsmouth and the outside world changed, but it did not cease to exist. The preservation of the permeability of the boundary helped to ensure the survival of the town.

The town's identity and autonomy was preserved largely by the activities of the Portsmouth Relief Association. In addition to their accomplishments in ensuring survival,
the Association preserved the social structure and culture of the community. The Portsmouth Common Council was able to resume its duties in a community where it was still accepted as the legitimate authority. The only social dislocation it needed to address was the filling of vacant positions. The town after the epidemic remained essentially the same as before the sickness.

Even as a 19th century organization, the Relief Association exhibited a number of modern characteristics that enabled it to deal with a chaotic situation. Its lack of hierarchy, its common understanding of the environment, its apparent absence of rules and structure enabled it to meet the crises of each new day with efficiency and dispatch. But even as it demonstrated its modernity, it should be noted that the Association was very much an antebellum organization in its expectations. Its members represented the dominant group in the society. They expected that those who could afford to flee would do so. They expected that women should be a protected class and were therefore astonished by the actions of the Sisters of Charity who responded to their calls for assistance. They expected that the poorest in the society would have had something to do with the origin of the epidemic, and they expected that those they had enslaved would be eager to tend to those who had enslaved them.

A hallmark of organizations is their identifiable outputs. The detailed budget in the Association’s report allows us to identify how the organization allocated its resources. It is considerably more difficult to assess the impact of the organization’s work. On the face of it, it is difficult to see how the town would have survived the epidemic with its social institutions intact if the Association or a similar organization had not come forth to provide leadership and management. However, this conclusion, no matter how reasonable it appears, cannot be evaluated. What is more apparent from the town records in the period following the epidemic is how little attention the government paid to the work of the Association. Beyond auditing the accounts, the Common Council seemed to have little interest in how the crisis was managed. Although the Council took measures to prevent another epidemic (e.g., the establishment of a Board of Health), no thought seems to have been given to the management of another crisis if it did occur. Fortunately, it did
not. The Portsmouth epidemic was a unique event in the history of the town.

Background of Organizations

The prominence of the Portsmouth Relief Association in the town during the epidemic demands a closer look at organizations and their place during similar phenomena. Organizations are of ancient provenance. They were employed by the Pharaohs to build pyramids and by the emperors of China to construct irrigation systems. The organization of the Roman Catholic Church saw Europe through the difficulties of the medieval age (Etzioni, 1964, pp. 1-2). Anderson and Carter state that an organization is "a social system whose purpose is the achievement of specific, explicit goals." In this aspect, the nature of the Portsmouth Relief Association as an organization is undeniable. The goal was survival of their town under the worst of circumstances. To fully comprehend the achievement of the Association in meeting this goal, we might reflect on what might have happened had this organization not come together.

Again, Thucydides provides the classic description of the social consequences of the dissolution of control during time of the plague.

For the catastrophe was so overwhelming that men, not knowing what would happen next to them, became indifferent to every rule of religion or law...Athens owed to the plague the beginnings of a state of unprecedented lawlessness. Seeing how quick and abrupt were the changes of fortune which came to the rich who suddenly died and to those who had previously been penniless but now inherited their wealth, people now began openly to venture on acts of self-indulgence which before then they used to keep dark. Thus they resolved to spend their money quickly and to spend it on pleasure, since money and life alike seemed equally ephemeral. As for what is called honour, no one showed himself willing to abide by its laws, so doubtful was it whether one would survive to enjoy the name for it. It was generally agreed that what was both honourable and valuable was the pleasure of the moment and everything that might conceivably contribute to that
pleasure. No fear of god or law of man had a restraining influence. As for the
gods, it seemed to be the same thing whether one worshiped them or not, when
one saw the good and the bad dying indiscriminately. As for offences against
human law, no one expected to live long enough to be brought to trial and
punished: instead everyone felt that already a far heavier sentence had been passed
on him and was hanging over him, and that before the time for its execution
arrived it was only natural to get some pleasure out of life.

We cannot know what might have occurred in the absence of the Relief Association or a
like organization. But we do know that Portsmouth did not descend into the same state of
civil collapse as the Athenians.

Activities of the Portsmouth Relief Association

On the 5th of February, 1856, the Portsmouth Relief Association presented it report
to the Portsmouth Common Council and requested that the Council audit its accounts.
From a 21st century perspective, this seems a surprising event. Many on the Council had
deserted the town. Seven men who had remained had taken it upon themselves to form a
de facto government, maintain order, care for the sick, and bury the dead. Now the
Association, which had seamlessly ceded authority back to the Council at the end of the
epidemic requested that body to review and approve its works.

The Association began its report with expressions of gratitude to “the citizens of
every section of our country” who had contributed money, goods, and services to “a dying
community” (Report of the Portsmouth Relief Association, p 10). Thanks were expressly
given to a number of men by name – the head of the Seaboard and Roanoke Railroad
Company, men who had headed relief efforts from other cities, and physicians at the Naval
Hospital, suggesting that personal, rather than institutional relationships were thought to
be the drivers of organization and action. A notable exception is the formal language use when describing actions of the federal government. However, its agents, namely the physicians at the Naval Hospital were personally known and warmly regarded.

Unfortunately, the Report does not recount how or even when the Association was formed. The writers describe how the epidemic had seized upon the community when totally unprepared for it. The whole population was seized by panic. There was no place prepared for the reception of the indigent sick; and from want of knowledge of the character of the disease, it was next to impossible to procure competent nurses. All merchantile pursuits and mechanical operations having been brought to a close—the wages of labor having been stopped, and the stores having been closed, the Association at the very threshold found its hands full (pp. 12-3).

The Report states that the “first need” was “supplied by the consent of the Government to the use of the Naval Hospital; and the Association at once proceeded to afford all the relief in their power to alleviate the suffering caused by the want of food and nursing” (Report of the Portsmouth Relief Association, p. 13). We know that the Common Council met on the 2nd of August, noted that the use of the Naval Hospital had been obtained and added members to the Sanitary Committee. (Unlike the first three appointments, the new members were not members of the Council.) Their last meeting was August 7th when they voted additional funds for the use of the Sanitary Committee. Mass flight started from the town the first week in August when it was recognized that the

78 It is notable that the men of the Association directed their gratitude only to other men. The attitude of the Relief Association members toward women is well-expressed in their remarks concerning the work of the Sisters of Charity. They were praised for their “womanly sympathy” and their “entire immolation of self on the altar of charity” (Report of the Portsmouth Relief Association, p. 71). Indeed, the documents of the time (and even of somewhat later times) rarely mention women as individuals. For example, in 1890, a long-time Portsmouth resident, compiled a list of people in the neighborhoods he knew as a child. With the notable exception of a rare female shopkeeper (both black and white), women were described only by whom they married (Foreman, 1911).

79 The term “indigent sick” expresses the mid-19th century belief that middle class patients should be cared for at home. Hospitals were for poor people.
epidemic was not confined to Gosport. By the middle of the month, it was reported that only one Council member (possibly Dr. Schoolfield) remained in the town. However, the Sanitary Committee was likely gone by then. One member of the Committee died during the epidemic, although we do not know when. The other members are found neither on the roster of the Relief Association nor on the list of the dead. The *Portsmouth Transcript* reported that on September 25th, the Common Council was without a quorum, but “those of them who remain, cooperated with by a few citizens, have undertaken the management of affairs.” However, it is unlikely that nearly six weeks passed with no organized relief. The wording of the Association’s Report, “...the first need was supplied by the consent of the Government to the use of the Naval Hospital; and the Association at once [italics mine] proceeded to afford all the relief in their power to alleviate the suffering caused by the want of food and nursing.” implies that the Association was founded close to the opening of the Naval Hospital to civilian patients and when food shortages were seen.

The quarantines that would have prevented food from arriving were established early in August. The mass flight that occurred at that same time would have impaired the food distribution system. Food became scarcer as the month progressed. By the end of August, near famine conditions prevailed. It is reasonable to speculate that the Association took control of the situation sometime near the middle of the month.

In any case, when the Association did begin its work, its first action was to district the town into wards and to appoint a committee for each ward. It was the duty of the committees to “seek out the sick and destitute.”

A central office was opened, at which daily sessions were held. For the supply of provisions, articles of diet and clothing, stores were rented and store-keepers placed in them. As fast as goods arrived they were sent to the stores to be issued to those in need, on the orders of the Ward Committees, or of the members of the Association. Dietetics and cordials were gratuitously supplied on all the physician’s requisitions” (*Report of the Portsmouth Relief Association*, p. 13).
In these short sentences, we see the bones of the organization—a core group with decentralized authority and maintenance of societal norms (such as keeping normal sites of commerce and respecting prescriptive authority) to attain its basic goal of survival. It was not enough for the Association to create an organization, it was necessary to continually recreate it. All four of the shopkeepers at the Provision Store fell ill and three died. All the remaining town apothecaries also fell ill. The Association replaced them with volunteers from abroad. All of these also became ill and four died.

The Association took responsibility for all functions, both commercial and official, that would enable the town to function at the most basic level. Transportation, for example, proved to be a major problem, especially transport to the Naval Hospital for the sick. There was also the matter of housing for the incoming volunteers. First, they were accommodated at a private residence—later at a hotel. Needs changed as the epidemic progressed. The Association opened an orphanage, placed it under the superintendence of the Sisters of Charity, then sent the children to Richmond when the Sisters caring for them became victims of the epidemic themselves. One of the Association’s most pressing responsibilities was procuring nursing services. In this the Association’s Report came down firmly on the side of the disease’s being miasma-based. Indeed, the Association attributed its difficulties in finding nurses to the fact that the people of the town, not being experienced in yellow fever visitations, were ignorant of its non-contagious nature. “It was hard to persuade them that there was no more danger in nursing the sick, than there was in breathing the atmosphere in the streets” (Report of the Portsmouth Relief Association, p. 15). Their efforts in burying the dead were eased by the heroic actions of Bob Butt.

Amazingly, the Association was apologetic for the amount of funds they had expended. They complained of extortionate payments being demanded by nurses and drivers. The Report stated that “the Association endeavored to get along with as little expenditure of money as possible” (Report of the Portsmouth Relief Association, p. 15). It is not clear why the members of the Association felt so constrained. For Common Council members, used to dealing with severe budget constraints, the attention to
economy was ingrained. That this habit obtained even during a catastrophic situation suggests that the Association felt that they were custodians of public funds and therefore responsible to the town for their wise use.

"...when the amount expended is contemplated, and the circumstances by which they were surrounded taken into consideration, it is not probable that another organization could have done with less. Emergencies which could not have been perceived were constantly arising, which had to be met at once. Personal help was continually in demand, and this was only to be had at exorbitant rates. These, and other causes of a similar nature, went far to increase the expenses beyond what they would have been in ordinary times (Report of the Portsmouth Relief Association, p. 15).

How was the money spent? Holt Wilson, treasurer of the organization, kept detailed records of each contribution and expenditure. Indeed 50 full pages of the Report are dedicated to the accounts. Although most expenditures were undertaken directly by the treasurer, two other members of the Association also spent funds directly. The contributed funds were spent for a dazzling array of goods and services – transportation, nursing, grave digging, catering, druggists, laundry, office supplies, unloading steamboats, clerking in the stores, groceries, day labor, clothing for physicians and nurses, lumber, direct relief for widows and children, replacement of furniture and bedding removed from houses, ice, wood, coffins, and even orders of cigars for the doctors and nurses. Some of the entries reflect the Association's notion of itself as a temporary replacement for the government of the town. For instance, although the Common Council had promised to pay for services rendered by the Naval Hospital, they never did so. However, the Association made numerous payments to the Hospital over the course of the epidemic. Both the Association and the Common Council clearly believed that the Council's promise had been fulfilled by the Association. The Association also paid for some of the expenses incurred for the trip made on behalf of the Council to Washington to
request the use of the Hospital—even though the Association was not even in existence at
the time of the trip. The Association also cooperated with their counterpart, the Howard
Association in Norfolk. Many contributions came to both cities with the request to share
with the other. Both organizations honored these requests to share funds, although in all
other aspects of management, the two organizations operated alone. It is interesting to
note that, although the Common Council resumed its meetings immediately after the
epidemic, the Association continued to disburse funds until the end of the year. In fact,
during this time, the budget of the Association shows monies being given to the Council
for the care of orphans. This delay allowed the municipal government to avoid virtually all
economic responsibility for the disaster.

As noted above, one of the most telling examples of how both the Association and
the Common Council saw the Association as a de facto replacement for the town
government is shown in its dealings with the Naval Hospital. According to the terms of
the agreement entered into by the Hospital and the Common Council,

the town was to reimburse all expenditures rendered necessary for the care and
support of the sick citizens who might be sent to the hospital; and also to make
good all damage done to the furniture, bedding, &c. [sic] by reason of its use by
them; and the Commodore was further instructed to require, as a preliminary to
the occupation of the Hospital, a guarantee from the corporation to this effect.
Accordingly, a resolution was adopted, pledging the faith of the town to the terms
agreed on by the committee, and a copy of the resolution, authenticated by the
signatures of the President and Clerk of the Board, with the corporate seal
annexed, was delivered to Commodore McKeever on the same day, and on the
next day, August 1st, that noble institution was thrown open for the reception of
the citizens of Portsmouth, sick with yellow fever (Report of the Portsmouth
Relief Association, p. 157).

The pledge of the “faith of the town” was actually kept by the Association which paid the
Hospital over $3000, mostly in personnel expenses. The Council “paid” the Hospital only by having medals struck commending its medical officers.

Goals, Organizations, and The Portsmouth Relief Association

How did the Portsmouth Relief Association meet needs usually addressed by other components in the society? What enabled the Association to function in a system deformed by the universal experience of a life-threatening disease? To answer these questions, we will utilize a number of theories having to do with the nature of organizations. These theories allow us to examine the circumstances of the workings of the Association within the system. After this more detailed analysis, we will again look at the work of the Association as explained by Anderson and Carter.

The yellow fever epidemic in Portsmouth was a phenomenon of impressive complexity. We have examined how social, political, economic historic and biological forces converged to create a “deathstorm.” The government of the town abandoned it leaving a vacuum of authority. A hurriedly formed private group became, in essence, the town government, then returned the reins of authority to the elected officials who returned when it was safe to do so. Here, we wish to examine the nature of the group that assumed responsibility for shepherding the town through the catastrophe.

Organizations are distinguished most by one characteristic—goal attainment. Indeed, Parsons states that this is the defining quality of an organization. Organizations are social units (or human groupings) deliberately constructed and reconstructed to seek specific goals (Structure and Process in Modern Societies cited in Etzioni, 1964, p. 3). Corporations, armies and hospitals are examples of organizations while ethnic groups and families are not. Organizations may be viewed as closed systems. Seen in terms of formal structure, an organization may be labeled a rational system. It may be labeled a natural system if seen in terms of its informal structure. In the case of the Relief Association,

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80 Organizations are part of a larger system, but they may also be viewed as systems in themselves. As such, the individuals within them function within both the formal structure of the organization (the interrelated pattern of jobs that comprise the organization) and the
formal structure seemed to be at a minimum. Although we know that one member served as treasurer, we also know that responsibility for resource allocation was not his alone. The list of the Association members does not state that any of them held a particular office within the Association. Although the Mayor is listed first, there is no evidence that he served as the leader (assuming there was a leader) of the group (Report of the Portsmouth Relief Association). Indeed, that position may have been held by Dr. Schoolfield given his assumed knowledge of medical issues. When viewed as a closed system, the Association demonstrates the characteristics of a natural system—a network of cooperative relationships among peers dedicated to a specific goal. In their work comparing social and formal organizations, Blau and Scott (2001) suggest the underpinning of these kinds of cooperative relationships. They argue that three characteristics constitute the core of social organizations. First, the members of the organization share common values. Second, they share common social expectations, i.e., there is a standard of acceptable behavior. Lastly, there are differential role expectations associated with various social positions. As peers, it could be expected that the members of the Association shared values and recognized similar societal norms. As men with experience in governance, it might be expected that they might assume a leadership role during a crisis. But, more importantly, the presence of the characteristics of a strong cooperative organization may have obviated the need for a formal, hierarchical structure.

Organizations may also be viewed as sets of interdependent activities (open systems). Organizations may therefore be viewed not simply as entities, but also as processes (Scott, 2003, pp. 26-33). The Association was extraordinarily interactive both within the town and abroad. Indeed, since it was virtually the only viable town institution, it bore well-nigh the entire interaction burden. The Association’s report documents not only the organizations interactions within the town—arranging nursing, burials, distribution of supplies, home visits, but also its extraordinary record of communication with the organization’s informal structure (the set of demands and expectancies the individual encounters within the group ((Scott, 2001)).
outside world. The Association received all letters and contributions sent to the town and coordinated volunteer activities with the cities sending volunteers and kept outside donor groups appraised of the status of the epidemic.

As Parsons has noted, the goals of an organization allow identifiable outputs. The document presented to the Council allows us to identify the outputs of the Association. Resource allocation, maintenance of order, control of commerce, aid for the sick, care of orphans, food and drug distribution, and burial of the dead were the outputs of the Association in its role as a quasi-government.

Scott (p. 11) notes that the dedication to specific goals defines a set of problems common to organizations. These include: defining objectives, inducing participants to render services, controlling, coordinating services, garnering resources, selecting and training participants and achieving a working accommodation with neighbors—all issues addressed by the Portsmouth Relief Association in supplying services to the town and coordinating donations with the Howard Association in Norfolk.

According to Etzioni (1964, pp. 5-19), goals serve a number of purposes. They orient the organization in time by looking toward the future. They not only legitimize the activities of the organization, but the very organization itself. Goals also provide a means of accountability—they are met or they are not. Goals may also evolve or become perverted (e.g., an organization that directs funds to luxurious quarters rather than to the tasks at hand). There may also be unstated goals, e.g., a charitable organization that supports the poor may also exert a form of social control. And goals may be larger than stated. A manufacturer may have a goal of processing $x$ units per week, while the true goal is to make profits. Goals may also be displaced. The survival of the organization may become the organization’s most important goal. This becomes especially problematic when the organization’s original goal has been met—as in the case under study. The organization becomes a “machine without a purpose” which must either find a new goal or cease to exist. (Etzioni, p. 13) In the Portsmouth situation, the machine ceased to exist.

Organizational Characteristics of the Portsmouth Relief Association

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It should be noted that the definition of organizations can be somewhat fluid depending on the perspective of the social theorist offering the definition. At the most basic level Popenoe (1968, pp. 80-82), offers a review of some basic distinctions between organized groups and such totally disorganized groups as crowds and mobs.  

Perhaps the best way to understand organizations is to describe an unorganized population.

...the rights, duties, possessions, functions, roles, social status and position of its members are undetermined and undefined either in broad outline or meticulous detail; so are its categories of the lawful, recommended, and prohibited forms of conduct and relationship; so are its official law and government, structure of social differentiation and stratification, economic order, and so on. Consequently, all remains uncrystallized. The whole system of social relationships and values is confused and vague. Members do not know who is ruler and who is to be ruled; what are the rights and duties of each; what is the proper form of social relationship between them; what actions and conduct are recommended; lawful and prohibited for each party (Sorokin, P.A. Society, Culture, and Personality: Their Structure and Dynamics as cited in Popenoe, p. 81).

Probably the key element that kept Portsmouth from falling into the states of disorganization described by both Thucydides and Sorokin was the public acceptance of the Association as a substitute government, i.e., the recognition granted to the authority of the Association. Where did this authority originate? Handy (1976, pp. 114-21) has offered six sources for the power of an organization:

- physical power
- resource power

Note too that the very language of the discipline is fluid. While Anderson and Carter define organizations and groups as different entities, Popenoe refers to “organized groups.”

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• position power
• expert power
• personal power and
• negative power

Physical power is the police power of an organization. The physical power of a
government permits them the use of direct coercion in law enforcement. Resource power
refers to the ability of an organization to control available resources, e.g., the ability of a
union to withhold labor. Position power refers to legitimized power — the authority of a
government official, for example, comes from the legitimate authority of the government
itself. Expert power comes as the result of special expertise. Sometimes the possession of
even a limited amount of special knowledge will confer power if others in the group lack
any knowledge. Personal power is often called charisma. It may be enhanced by other
kinds of power, e.g., the holding of high office. Negative power is the capacity to disrupt
or stop events. Persons in lowly positions, e.g., a clerk who can mislay mail, often can
possess considerable negative power.

The Portsmouth Relief Association possessed a number of the above sources of
authority. The extent of the policing functions of the Portsmouth Relief Association is
unknown. Some cities during time of epidemic suffer a breakdown of authority leading to
increases in criminal acts. Thucydides’ description of the experience of Athens certainly
points to a vacuum of authority and a rise in uncivil behavior. Contemporary accounts of
the Portsmouth experience do not tell of a similar situation. Indeed, the picture seems to
be that of a community so dispirited as to suffer a lack of enough energy to perpetrate
criminal acts. The budget of the Relief Association includes the expenditure of about
$400 for wardens, presumably appointments made with an eye to maintaining order. But
there is no record of the activities of these men. We do know that the Council assumed
responsibility for the police by voting funds to reimburse them for fees lost during the
epidemic. Given the continual struggle of the Association to find persons willing to
transport and nurse patients, we can reasonably speculate that, although the Association
may have been able to maintain civic order, it did not possess the forces necessary to coerce the unwilling (whether slave or free) to perform these functions.

Clearly the most powerful force exerted by the Association was its control of resources—namely the munificent contributions that poured into the area from almost every part of the country. Letters accompanying contributions were customarily addressed to the Mayor, a member of the Association, or to Holt Wilson, its treasurer. Absolute control of the purse meant that all resources—food, medicines, nursing services, transport, housing, burial needs, orphan support—were meted out by the Association. Funds appear to have been spent as the need arose and authorized by any member of the Association who knew of a need. Most needs were documented, e.g., “to Robert G. Scott, keeper of store to pay of [sic] laborers and hands”, but others were more general, e.g., a payout of $400 to “J.N. Schoolfield’s order, for cash to self, to pay off sundry bills” (Report of the Portsmouth Relief Association, p. 41). In their absolute power over the purse, the Association not only replaced the financial functions of the municipal government, but also those of the commercial sector of the town.

As stated above, position power refers to legitimized power. Clearly, with the dissolution of the Common Council, the Relief Association moved into a legitimate power vacuum. However, in their persons, some brought remnants of legitimate power to their task. The mayor was a member of the Relief Association as were four members of the 1855 Common Council. (A fifth man had served on the Common Council in 1854.) Therefore six of the seven members of the Association had been entrusted by the voters of Portsmouth with legitimate power and may have been seen by them as a quasi-continuation of legitimate authority. Legitimacy may also have been conferred on the Association by its membership—white males. Weber (1953/1980) suggests that beliefs in the social order and its prerogatives legitimate authority. The Association manifested the prevailing social order in Portsmouth. It is important to note, however, that the Association possessed no legal authority at all. In this, they acted in the same way as the volunteer association that took over management of the city of Philadelphia in 1793.
Most contemporary and later observers may assume that the expert power on the Association rested with Dr. Schoolfield. Certainly, it was the Common Council's first thought as they formed the Sanitary Committee around his leadership. However, it has been long realized by public health practitioners that the possession of clinical knowledge necessary to treat individual patients does not qualify its owner to address the health needs of populations. Indeed, the debate as to what constitutes the basis of public health practice continues even now (Lundgren, 2001). However, it is clear that political and management skills are of prime necessity in meeting epidemic threats. The mayor and past and present Council members were able to transfer these skills acquired in more serene times to the yellow fever crisis.

There is no way to evaluate the personal power based on charisma that may have been possessed by the members of the Relief Association. Some, most notably the mayor, had been successful in the political realm and might therefore be expected to demonstrate the leadership qualities necessary to win and hold office. In fact, leaders may gain their legitimacy by means of elections. They may also arise because of special circumstances (Structure and Process in Modern Societies cited in Etzioni 1964, pp. 1-3). But, whatever their histories or however they gained legitimacy, there can be little doubt that the men of the Portsmouth Relief Association demonstrated extraordinary determination and leadership in seeing their town through its greatest crisis.

In at least one instance, volunteer action went beyond services during an epidemic. When New York City refused to respond to the Philadelphia situation by taking steps to prevent yellow fever from striking there, a New York volunteer group hired physicians and inspectors to inspect ships and wharves. Later, the City entered into a form of public-private partnership by establishing a committee to work with the volunteer group and investing the joint group with full powers "to do everything which may become necessary" (Minutes of the New York City Health Committee cited in Duffy, 1990, p. 40).

Miller (1985, pp. 191-2) notes that conflicting loyalties is an issue commonly faced by organizations in times of disaster, i.e., those who may be dealing with the disaster may have family responsibilities as well. We do not know how the men of the Association dealt with their family responsibilities during this time, however, it was not uncommon for men in both cities to send or take their families to safety and then to either stay or return to assist with the epidemic.
As far as negative power, any organization as singularly powerful as the Relief Association was in its time can cause things not to happen as well as to happen. Events that might have happened, but didn’t, are rarely documented. For instance, we know well what monies were spent by the Association and how they were spent, but we do not know how many (if any) may have applied for funds and not received them. Perhaps the most intriguing non-event occasioned by the Association was its dissolution and ceding of its considerable authority to the Common Council on the return of its members to the town. The Association still had considerable funds and certainly the good will of the community and could doubtless have continued as a powerful player in town affairs, but did not. Not only were its funds turned over to the Council, but the Council was also requested to bless the Association’s management of the contributions it had received.

Anderson and Carter (pp. 119-20) note that organizations generate power and, since they must ensure compliance to achieve goals, must apply some kind of control. Parsons (pp. 42-4) believes that the generation of power in an organization depends on four factors:

- the institutionalization of a value system which legitimizes its goals and functions,
- the regulation of its procurement and decision-making processes through universalistic rules,
- command of support of the people on whose cooperation it depends, and
- command of necessary facilities, i.e., financial resources.

The Portsmouth Relief Association was able to meet all of Parsons’ specifications. By acting as a substitute for a legitimate government, it clothed itself in the extant value system of the town. Its members, experienced in the rules of procurement and decision-making common to governance, brought their knowledge to the process of ensuring survival in a time of crisis. Their position as past leaders commanded the support of the population and their total control over resources ensured the dependance of the
population on the Association.

Etzioni (1968, pp. 97-101) suggests that organizations have systematic differences in their means of enforcing compliance. First, he notes that, unlike families or groups of friends, organizations are "artificial". Because of this artificiality, organizations are more reliant on formal controls to ensure group conformity. Etzioni argues that power is applied in different ways depending on the nature of the organization, from physical coercion (as in a prison) to utilitarian (or remunerative) incentives (in a factory) to normative allegiance (to a church). Although organizations may utilize more than one category of compliance measures, a mix of approaches tend to cancel each other out. Although the author provides lists of different kinds of organizations utilizing either coercive, utilitarian or normative methods of enforcing compliance, governments, as such, are not specifically categorized, although some government functions such as running prisons are listed as coercive. Governments, however, clearly possess the necessary power to function as coercive organizations.

Etzioni lists voluntary organizations as normative in their methods of gaining compliance. However, the goals of an organization bring their own legitimacy (Etzioni, 1964). In another work, Etzioni (1968, pp. 59-61) classifies the means of control employed by an organization into three categories: physical, material or symbolic. Physical controls are punitive; Etzioni offers whips and locks as examples. Material controls (utilitarian power) consist of goods and services and, at base, money. Symbols include prestige and esteem (normative symbols) and love and acceptance (social symbols). Normative symbols may be used by higher ranks to control those of lower rank. Etzioni also ranks these forms of power in terms of their alienation of those under control with coercive power being the most alienating, and symbolic power the least alienating. "...the application of symbolic means of control tends to convince people, that of material means tend to build up their self-oriented interests in conforming, and the use of physical means tends to force them to comply" (Etzioni, 1968, p. 60).

The model of an organization is partially dependent on the type of controls it applies. Etzioni examines prisons as coercive organizations and notes the duality of a
formal hierarchy (wardens, guards) and an informal hierarchy among the prisoners. Control in normative organizations depends more on the personal qualities of the people within them than the more formal controls seen in coercive organizations. Individuals, often those of high status in the community, use their personal influence to exert power. This kind of organizational power is seen often in religious organizations. Utilitarian organizations are characterized by a flatter power structure with officials, formal and informal leaders sharing control—a structure sometimes found in factories (Etzioni, 1968), but also common in voluntary associations (Scott, 2003, p. 13). The evidence suggests that the Portsmouth Relief Association employed at least a few police officers. However, the Association’s frequent complaints as to the difficulties encountered in enlisting willing or unwilling individuals to aid in such activities as nursing and patient transportation implies that the Association possessed little coercive power. What power the Association possessed probably lay in the personality and stature of its members, its control over resources and the absence of any other source of authority.

Organizations that serve in time of disaster may spring from a number of sources Dyne (Organized Behavior in Disasters, 1970 cited by Miller, 1985). These sources are summarized in Table 3. Established organizations may simply expand their functions or they may extend their range of services to meet the emergency. For example a fire department may be called upon to put out a single fire or a number of fires, a small brush fire or an inferno. In any case, the department is providing essentially the same service. Other organizations may add extra services in time of emergency. A utility company serving a community after a hurricane will expand its repair crews to meet the need for reconnecting service. Some existing organizations will take on unfamiliar tasks during an emergency. A construction company may turn its attention to dealing with collapsed buildings rather than erecting them. Members of the ironworkers union in New York City were among the first to arrive at the Twin Trade Towers on 9/11 to deal with the disaster. Lastly, organizations may emerge and disappear during a disaster to address a variety of problems. A neighborhood may organize for clean-up after a storm. Clearly the Portsmouth Relief Association was an “Emergent Organization” according to Dyne.
Although many of its members were familiar with municipal services, the Association's responsibilities were far broader as well as more novel than those performed by the town government. Supply and distribution of food and drugs, nursing services, and transportation were activities not usually undertaken by the Common Council. However, such activities as budget management and maintenance of social order were familiar.
TABLE 4
ORGANIZATIONAL RESPONSES TO DISASTER

<table>
<thead>
<tr>
<th>Type of Organization</th>
<th>Disaster-related Task Performance</th>
<th>Disaster-related Structural Alterations</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I: Established organizations</td>
<td>Performance of many familiar tasks; demand for service is greatly increased</td>
<td>Few structural changes; changes that occur are largely the result of increased demand for organization’s services; tasks carried out by existing personnel</td>
<td>Police, Fire departments, National Guard</td>
</tr>
<tr>
<td>Type II: Expanding organizations</td>
<td>Performance of familiar tasks: prepared to carry out disaster-related tasks</td>
<td>Major structural changes due to disaster-related tasks and integration with other groups and volunteer or auxiliary personnel</td>
<td>Red Cross, utility companies</td>
</tr>
<tr>
<td>Type III: Extending organizations</td>
<td>Performance of largely unfamiliar disaster-related tasks</td>
<td>Major structural changes due to disaster-related tasks</td>
<td>Local construction company, student organizations help salvage library</td>
</tr>
<tr>
<td>Type IV: Emergent organizations</td>
<td>Performance of unfamiliar disaster-related tasks; emergent definition of tasks to be carried out</td>
<td>Emergent structure; shifting and temporary membership</td>
<td>Neighborhood rescue and cleanup crews</td>
</tr>
</tbody>
</table>

The Portsmouth Relief Association as a Mid-19th Century Organization

Was the Portsmouth experience typical of 19th century epidemic situations? As we have seen, in the absence of a functioning municipal government, a volunteer organization assumed responsibility for management of the town of Portsmouth during the epidemic. Whatever we may think of the actions of the Portsmouth government, public-private partnerships in time of epidemic were not unknown at the time. A similar sort of private, volunteer performance of all public functions was clearly exemplified in the classic Philadelphia experience a half a century earlier and was also found in the Norfolk experience. In some cases, most notably in New Orleans where epidemic disease was almost constant, the government found it expedient to directly support charitable organizations to care for victims while they regularly fled to more salubrious locales.

In some ways, the rather muddled relationship between public and private efforts to care for the sick reflected the organizational relations of the time. For most of the population, caring for the sick was considered a domestic responsibility. Hospitals, our dominant health care institution, were uncommon, existing only to care for those who could not be tended at home – mainly travelers and the destitute. Some were public, but private charitable organizations, too, took on themselves responsibility for the sick. In mid-century in Sacramento, both the Odd Fellows and the Free-Masons nursed the sick, and provided coffins for the dead (Roth, 1997). Certainly the most conspicuous example of a private organization taking responsibility for the care of the sick in time of epidemic was that of the Howard Association of New Orleans. Formed to address the yellow fever epidemic of 1837, year after year, the Association tended to the victims of the city’s pathogen-friendly climate (Carrigan, 1994, p. 45). This was no small responsibility. In the great yellow fever epidemic of 1853, the Association managed a budget of $200,000. When the Charity Hospital and four temporary infirmaries established by the city proved inadequate, the Association opened an additional four hospitals.

Association members divided the city among themselves, as they had done in the past, and took responsibility for locating destitute yellow fever patients and calling
on them daily; arranging for home medical and nursing care; paying for medicines, ice, groceries, and bedding; and, when necessary, transporting patients to hospitals and orphans to asylums, and arranging for burial of the dead (Carrigan, 1994, p. 68).

The Association was also given supervisory authority over the two municipal orphanages (Carrigan, 1994). But the Association was only one of the organizations in New Orleans that provided services in time of epidemic. With the municipal government paying little attention to the poor, a variety of mutual assistance societies, labor unions, religious associations and others served as a safety net in epidemic times (Carrigan, 1994, p. 69, 344-353).

The variation in methods adopted by 19th century American cities in dealing with epidemic crises may be in part a reflection of confusion as to where responsibility for population health rested. Health in terms of care for the sick was transitioning from a matter of philanthropy to one of professional responsibility. The responsibility for public health measures was also undergoing transition in the period under study. The lack of clarity concerning the obligations of legitimate governments was also undergoing change - a transition reflected in the variation in responses to the threat of epidemics. The Baltimore yellow fever epidemic mentioned earlier seems to have been addressed by the city government. New Orleans and New York entered into private-public partnership arrangements. Charleston too, with five yellow fever epidemics in the last decade of the 18th century, also relied for a time on a physician volunteer committee to identify cases of yellow fever. However, the city entered the 19th century with paid city inspectors (Duffy, 1992). Portsmouth followed the earlier Philadelphia model with the mayor remaining in the city and a group of volunteers serving as a *de facto* government. In some instances, states provided some assistance. In New York, the state legislature paid considerable attention to the problems of epidemic presented by the port of New York. In the 1798 epidemic in New York City, the state provided most of the funds needed for relief; however, the state legislature required the City to have paid inspectors and a system for
routine quarantines. The state of Massachusetts too also granted cities authority to deal with epidemics. In an earlier time (1795) in Baltimore, before the city received a charter, the state of Maryland appointed physicians to inspect ships. However, when the city received a charter two years later, the state shifted responsibility to the municipal authorities. There were no state boards of health at the time (Duffy, 1992) and no federal interest until the massive yellow fever epidemic of 1878 forced the formation of a (short-lived) national board of health. What is most telling in the Portsmouth experience in terms of other government authorities is that the government and the Relief Association both looked to and received assistance from federal rather than state authorities. In a short time, these same citizens would be waging war against the government that had helped them in the name of the government that had abandoned them.

The Portsmouth Relief Association as a 21st Century Organization

Can the Portsmouth Relief Association serve as a model for 21st century crisis-relief organizations? The recognition of the need for organizations to accomplish work is age-old. During the Exodus from Egypt, Jethro, the father-in-law of Moses, directed him to delegate authority over the tribes of Israel in hierarchical lines. Socrates also directed his attention to the art of management of organizations. However, it was not until the approximate time of the epidemic that scientific attention was turned to the nature and management of organizations. For at least a century, writings concerning organizations focused on such principles as authority, hierarchy, specialization, rules, order and discipline (Shafritz, J.M. and Ott, J.S., 2001, pp. 8-78). This perspective mirrored the rational system description noted above. It was believed that organizations needed to be highly structured. This need for structure, however, led to a certain inflexibility, a characteristic that caused the disruption of the government during the Portsmouth epidemic.

By the mid-twentieth century, organizational theorists turned their attention to the more human aspects of organization, i.e., a natural systems perspective. In doing so, they began to question whether organizations' structures and functions actually matched
(Shafritz, J.M. and Ott, J.S., pp. 88-135). Cyert and March described organizations as coalitions of people with varied interests. Instead of following strict rules, the members of the organization continually made bargains with others on the basis of their own interests. Also during this time, basic assumptions made be earlier writers were questioned. Simon noted that accepted administrative principles such as efficiency and hierarchy were, in fact, often in conflict. Specialization might lead to non-recognition of factors important to the problems at hand.

Daft (1998, p. 14) describes the need for 21st century organizations to operate under conditions of randomness and uncertainty. He looks to future organizations to order themselves in such a way that they possess the flexibility to move, even to move drastically, to meet ever-changing circumstances. In a curious way, the Relief Association is an exemplar of this post-modern paradigm. The Portsmouth municipal government, with its classically ordered structure and rules, broke apart in the face of the epidemic. All of its members did not leave the area. The mayor and a few Council members remained. However, the government could not function as such because its structure required the convening of regular meetings, the presence of a quorum and the passing of ordinances as its means of operation. The Portsmouth Relief Association had no such restrictions. In fact, it seemed to operate with few, if any, rules. Its whole purpose was to address the constantly shifting needs of the population as the epidemic progressed. To accomplish the goal, authority was apparently spread throughout the organization. Evidence suggests that all or most members of the Association possessed the authority to make decisions as to funds appropriation as the occasion demanded. Although Holt Wilson served as treasurer, it is not clear that there were other officers. Letters accompanying donations were commonly addressed to the mayor or to Holt Wilson as treasurer, but not to other members as officers. There were some donations addressed to Dr. Schoolfield as chair of the Sanitary Committee, but that was the municipal organization that preceded the Association. With its small size, lack of specialization and absence of conventional organizational restraints, the Association could “turn on a dime” to address social conditions that had progressed from orderly to chaotic in a matter of days.
Conner (1998) argues that contemporary organizations must be re-thought to meet conditions of increasingly rapid change—even of chaos, i.e., exactly the conditions faced by the Portsmouth Relief Association. To meet these exigencies, organizations must demonstrate four characteristics: nimbleness, resilience, human due diligence and, above all, execution.

Nimbleness is the ability of an organization to succeed in an unpredictable, erratic environment by implementing important changes. The term means more than flexibility. Conner (p. 40) argues that it includes “speed, grace, dexterity, and resourcefulness.” In a competitive environment, nimbleness provides an edge over rival organizations. During the epidemic, nimbleness enabled the Relief Association to first organize itself and then to organize relief efforts in a constantly shifting milieu. Nimbleness enabled the Association both to utilize existing institutions (e.g., working with the clergy who remained in the town) and to address totally new problems (e.g., finding housing for volunteers). It allowed the members of the Association to awake to new conditions every day, to find new resources (e.g., volunteers, money, medicines) to meet the changed situation, and to ensure that the identified resources were appropriately utilized.

Resilience is the ability to absorb large amounts of disruptive change without a significant drop in productivity. Resilience may be seen in leadership, in culture and in context. Resilient leadership is predisposed to seize opportunities both within and outside the organization. It is focused, but also flexible in considering a variety of information on which to base decisions. Resilient leaders are able to structure the information they receive and are proactive in resolving new problems. The Portsmouth Relief Association demonstrated all these traits. Change was upon them with each new day, even with each new hour. They were able to utilize existing opportunities in the town (e.g., using an existing hospital) and to create opportunities outside the town (e.g., maintaining relationships with groups in other cities who were sending resources). The Association’s focus was forced upon them with the single mission of survival in an overwhelming crisis, but the members evidenced flexibility in their response to information, e.g., their shifting attention to such matters as nursing, burials and care of orphans as the need arose. They
showed an ability to structure their response as well as the ability to be proactive by districting the town and sending out volunteers to assess and address the situation in each district.

Human due diligence has to do with gathering of information, planning and engaging in actions directed to the effects of rapid change on the human capital of an organization. The human capital within the Relief Association’s own ranks was small in number, but large in leadership ability. The members of the Association knew the town intimately and were accustomed to leadership positions. The Association’s main human capital concerns were the people who remained in the town who might be able to assist in relief efforts and the large corps of volunteers who arrived from other locales. Both were subject to conditions of rapid change. Those who were well and capable of work on one day might be moribund or even deceased the next. Arriving volunteers had to be accommodated and assigned to appropriate tasks. Epidemic conditions forced the Relief Association to adapt to workforce conditions that were shifting daily, even hourly.

The impressive record of the Association’s ability to execute the activities needed to address the issues raised by the epidemic is best found in the detailed budget the Association presented to the Common Council after the crisis. The largest expense actually occurred after the disease had abated. That was the $25,000 endowment for the newly established orphanage. During the epidemic, the main expenditure was for coffins and burials ($8000) with general relief efforts costing about two thirds of that figure. Payments to physicians, nurses and to the Naval Hospital were $3000 - $4000 each. The aggregate figures, however, give only a hazy vision of the Association’s ability to execute. The long list of detailed expenditures contained in the Association’s Report testify to the organization’s ability to address diverse needs as they arose. A sample of expenditures is found in Appendix Two. With its flat organization, lack of structure and specialization, and its ability to succeed in a chaotic environment, the Portsmouth Relief Association departed from its 19th century roots and leapt 150 years into the future.

Discussion
This work started with the observation that we were looking at a small epidemic, and that we would be examining the events of the epidemic in the framework of systems theory. Entering into the year 1855, the town of Portsmouth was a functioning system with a number of entities (e.g., government, families, churches, commercial enterprises) interacting with each other and with the outside world. The system sustained and was sustained by an antebellum culture based on white male dominance. As the crisis matured, the system became stressed and deformed. The fleeing of families and individuals, the collapse of government and commerce created a vacuum of leadership and institutions at a time when the town needed both.

But, although the system changed, it did not fracture. In the absence of the usual sources of authority, a volunteer organization formed not only to address the epidemic itself, but also to, as far as possible, maintain the town. The organization dominated the town during the summer and fall of 1855. In fact, with the shrinking or absence of other entities that might balance its importance and its control of virtually all aspects of life (and death), the Portsmouth Relief Association might fairly be characterized as a totalitarian organization. Still, it can also be argued that the Association carried on “business as usual.” The town’s cultural basic social arrangements did not change. White men were still expected to lead the town. Black men and women were expected to serve the white population. The port and commercial establishments closed, but the Association made arrangements for supplies to arrive by steamer and opened its own stores. Many church members and apparently some ministers fled, but the remainder worked with the Association to succor the ill. Ritual funeral arrangements were abandoned, but the town managed to bury its dead in a timely fashion. Interactions with the outside varied from usual practices, but the Association maintained a robust correspondence with the outside world. Other than scenes of desperation at departing ships, there is little evidence of civil disorder.

Once it became evident that the Portsmouth Relief Association became the dominant element of the system, the focus of the work shifted to the Association as an organization. The Association clearly functioned as an organization with goals and
measurable outputs. But, oddly, in its flat structure, its diffusion of authority, and its ability to respond to new situations as quickly as they arose, the Association prefigured organizational theoretical thought one hundred years in the future.

The epidemic may have been small scale, but the response to it revealed a number of common antebellum social arrangements, and also typifies the American response to disaster relief as well as to the threat of specific diseases. Even today, the American approach to both is a mix of private and public responses. Both the American Red Cross and the Federal Emergency Management Agency are expected to address disasters. The National Institutes of Health and the Centers for Disease Control and Prevention are expected to deal with disease in the United States, but so are the American Heart Association and the American Cancer Society. In the Portsmouth experience, the municipal government was absent, thus providing the opportunity for a volunteer organization to seize the reins of government. The federal government did respond positively to the town’s request for the use of the Naval Hospital to care for the civilian population, but their official role seems to have been limited. Indeed much of the monies required to use the Hospital for this purpose came from contributions that were disbursed by the Relief Association.

Is there a place for organizations like the Relief Association in 21st century municipal crises? This paper is a case study and therefore suggestive rather than generalizable. However, the Portsmouth experience argues that bureaucracies with their stepwise methodologies and prescribed modes of operation will fail in the face of chaos. Even if the Portsmouth Common Council had remained intact, it is difficult to understand how their process of lengthy meetings, referrals to issues to committees, and the passing of ordinances could have addressed the conditions of the epidemic. Modern municipal governments have even more complex, entrenched governing processes. What then can governments do to prepare for times of crisis? The nature of the yellow fever epidemic is similar to many catastrophic conditions in that its effects were unanticipated and perpetually mutating. The Portsmouth Relief Association demonstrated that a small, flat group empowered to cut across customary lines of authority was able to address the
catastrophe in a way that a “normal” government could not. Cities may not be able to anticipate disasters, but they could consider planning for the immediate formation of such a group should it become necessary.

Probably the last American epidemic to occasion the mortality and morbidity seen in a runaway yellow fever epidemic was experienced in the influenza epidemic of 1918. Although a relatively modern public health structure (e.g., boards of health) existed in the U.S. at the time, the means to address the epidemic collapsed in city after city (Iezzoni, 1999). With regard to HIV/AIDS, slow-moving though it was, private organizations were required to goad the public health response. With our knowledge of and means to destroy the vector of yellow fever, the chance of repeating the Portsmouth experience of that disease is probably small. But the Centers for Disease Control and Prevention is looking to prevent a possible pandemic of avian influenza (bird flu). Avian influenza affects a number of bird species with others serving as reservoirs. The agent of infection has been identified as the H5N1 virus. The virus has demonstrated an ability to move not only from birds to humans, but also from humans to humans. The current mortality rate is 70 percent. There is no proven cure and no vaccine (Key Facts about Avian Influenza and Avian Influenza A Virus, 2005). Any sustained outbreak of this disease could prove a severe test of the public health system.

Today, the Virginia Department of Health is the agency which most directly addresses itself to the prevention and management of infectious disease in the state. The Department provides limited information concerning mosquito-borne diseases on its website (www.vdh.state.va.us). The most detailed information pertains to West Nile virus. There is nothing on the site regarding avian influenza. As for yellow fever, the Department advises vaccination for those who are traveling to “countries where the disease occurs.”

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84 HIV/AIDS is an epidemic in slow motion. Influenza, like yellow fever, kills quickly.

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Yellow fever in Portsmouth (1855, July 26). The Daily Dispatch.

SUPPLEMENTAL SOURCES CONSULTED


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## Nineteenth Century American Epidemics

<table>
<thead>
<tr>
<th>Year</th>
<th>Location</th>
<th>Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>1803</td>
<td>New York</td>
<td>Yellow Fever</td>
</tr>
<tr>
<td>1820-03</td>
<td>Nationwide</td>
<td>“Fever”</td>
</tr>
<tr>
<td>1831-2</td>
<td>Nationwide</td>
<td>Asiatic Cholera</td>
</tr>
<tr>
<td>1832</td>
<td>New York City and other major cities</td>
<td>Cholera</td>
</tr>
<tr>
<td>1833</td>
<td>Columbus, Ohio</td>
<td>Cholera</td>
</tr>
<tr>
<td>1834</td>
<td>New York City</td>
<td>Cholera</td>
</tr>
<tr>
<td>1837</td>
<td>Philadelphia</td>
<td>Typhus</td>
</tr>
<tr>
<td>1841</td>
<td>Nationwide (especially severe in the south)</td>
<td>Yellow Fever</td>
</tr>
<tr>
<td>1847</td>
<td>New Orleans</td>
<td>Yellow Fever</td>
</tr>
<tr>
<td>1847-8</td>
<td>Worldwide</td>
<td>Influenza</td>
</tr>
<tr>
<td>1848-9</td>
<td>North America</td>
<td>Cholera</td>
</tr>
<tr>
<td>1849</td>
<td>New York</td>
<td>Cholera</td>
</tr>
<tr>
<td>1850</td>
<td>Nationwide</td>
<td>Yellow Fever</td>
</tr>
<tr>
<td>1850-1</td>
<td>North America</td>
<td>Influenza</td>
</tr>
<tr>
<td>1851</td>
<td>Illinois, Missouri, the Great Plains</td>
<td>Cholera</td>
</tr>
<tr>
<td>1852</td>
<td>New Orleans and Nationwide</td>
<td>Yellow Fever</td>
</tr>
<tr>
<td>1855</td>
<td>Nationwide (many parts)</td>
<td>Yellow Fever</td>
</tr>
<tr>
<td>1857-9</td>
<td>Worldwide</td>
<td>Influenza</td>
</tr>
<tr>
<td>1860-61</td>
<td>Pennsylvania</td>
<td>Smallpox</td>
</tr>
<tr>
<td>1865-73</td>
<td>Philadelphia, New York, Boston, New Orleans</td>
<td>Smallpox</td>
</tr>
<tr>
<td>Year</td>
<td>Location</td>
<td>Disease(s)</td>
</tr>
<tr>
<td>--------</td>
<td>-----------------------------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>1865-73</td>
<td>Baltimore, Memphis, Washington, DC</td>
<td>Cholera</td>
</tr>
<tr>
<td></td>
<td>Philadelphia, New York, Boston, New Orleans,</td>
<td>Smallpox, Typhus, Typhoid, Scarlet Fever, Yellow Fever</td>
</tr>
<tr>
<td></td>
<td>Baltimore, Memphis, Washington, DC</td>
<td></td>
</tr>
<tr>
<td>1873-5</td>
<td>North America and Europe</td>
<td>Influenza</td>
</tr>
<tr>
<td>1878</td>
<td>New Orleans</td>
<td>Yellow Fever</td>
</tr>
<tr>
<td>1885</td>
<td>Plymouth, PA</td>
<td>Typhoid</td>
</tr>
<tr>
<td>1886</td>
<td>Jacksonville, FL</td>
<td>Yellow Fever</td>
</tr>
</tbody>
</table>


### APPENDIX TWO

**SELECTED EXPENDITURES OF THE PORTSMOUTH RELIEF ASSOCIATION (1855)**

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>August 27:</td>
<td>Wm. Porter for digging graves</td>
<td>$7.00</td>
</tr>
<tr>
<td>August 28:</td>
<td>Purchase of horse from Wm. Outten</td>
<td>$40.00</td>
</tr>
<tr>
<td>August 31:</td>
<td>Jacob I. Day, conveying sick to Hospital and Pest House</td>
<td>$54.00</td>
</tr>
<tr>
<td>September 3:</td>
<td>Jackson Carr, nurse at Hospital</td>
<td>$43.59</td>
</tr>
<tr>
<td>September 3:</td>
<td>Caterer, James Webb, support of physicians N. Street</td>
<td>$25.00</td>
</tr>
<tr>
<td>September 3:</td>
<td>Francis Reilly, nurse</td>
<td>$33.00</td>
</tr>
<tr>
<td>September 4:</td>
<td>James Lanider, to purchase clothing, &amp; c., for children destitute on his hands</td>
<td>$5.00</td>
</tr>
<tr>
<td>September 5:</td>
<td>Isaac, hack hire, carrying Julius Ward to Hospital</td>
<td>$1.00</td>
</tr>
<tr>
<td>September 6:</td>
<td>Pasquali Vassette, apothecary</td>
<td>$21</td>
</tr>
<tr>
<td>September 7:</td>
<td>Frederick Walker, servant at Hospital</td>
<td>$46.50</td>
</tr>
<tr>
<td>September 7:</td>
<td>Hannah Wheeler, cook at Hospital</td>
<td>$46.50</td>
</tr>
<tr>
<td>September 7:</td>
<td>Jane Baines, washer at Hospital</td>
<td>$31.00</td>
</tr>
<tr>
<td>September 7:</td>
<td>B.D. Clark, freight on 195 tons ice</td>
<td>$243.75</td>
</tr>
<tr>
<td>September 8:</td>
<td>Roscoe Wilson, services in provision store</td>
<td>$5.00</td>
</tr>
<tr>
<td>September 11:</td>
<td>John Wilkins, bread for Academy</td>
<td>11.52</td>
</tr>
<tr>
<td>September 11:</td>
<td>R. West, for unloading steamer</td>
<td>$1.00</td>
</tr>
<tr>
<td>September 14:</td>
<td>F. Montserral, cigars for Hospital</td>
<td>$9.60</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 15:</td>
<td>Corn for provision store</td>
<td>$82.40</td>
</tr>
<tr>
<td>September 17:</td>
<td>J.H. Cherry, hire of laborers on steamer</td>
<td>$25.00</td>
</tr>
<tr>
<td>September 17:</td>
<td>Lewis Stanwood, laborer at Hospital</td>
<td>$10.50</td>
</tr>
<tr>
<td>September 22:</td>
<td>James K. Haynes, services as clerk</td>
<td>$45.00</td>
</tr>
<tr>
<td>September 24:</td>
<td>J.S. &amp; R.B. Levy, stationery</td>
<td>$59.28</td>
</tr>
<tr>
<td>September 29:</td>
<td>Jacob, messenger at Hospital</td>
<td>$16.00</td>
</tr>
<tr>
<td>October 3:</td>
<td>Charles Fuller, waiter at Hospital</td>
<td>$35.00</td>
</tr>
<tr>
<td>October 8:</td>
<td>Dr. Thomas of Cincinnati, Ohio, &amp;c.</td>
<td>$300</td>
</tr>
<tr>
<td>October 8:</td>
<td>Dr. Bryant and Dr. Aspull</td>
<td>$300</td>
</tr>
<tr>
<td>October 11:</td>
<td>Rent, servants &amp;c., Crawford House</td>
<td>$600</td>
</tr>
<tr>
<td>October 13:</td>
<td>R. Porter, clothing for physicians and nurses</td>
<td>$24</td>
</tr>
<tr>
<td>October 15:</td>
<td>Relief to a widow and children</td>
<td>$10</td>
</tr>
<tr>
<td>October 16:</td>
<td>D. Peete’s bill for lumber, &amp;c., for pest house and fence, &amp;c.</td>
<td>$361.92</td>
</tr>
<tr>
<td>October 16:</td>
<td>R.G. Scott, hands, &amp;c., at store</td>
<td>$24.50</td>
</tr>
<tr>
<td>October 22:</td>
<td>Wm. A. Smith’s bill, bacon</td>
<td>$44.19</td>
</tr>
<tr>
<td>October 23:</td>
<td>Bill of Hatton &amp; Cooke for 2500 prescriptions</td>
<td>$225</td>
</tr>
<tr>
<td>October 31:</td>
<td>W.H. Wilson for injuries and damage to his house and furniture by yellow fever patients, mattresses, bedding, carpets, blankets, &amp;c. taken by association and replaced</td>
<td>$511</td>
</tr>
<tr>
<td>November 3:</td>
<td>Mashall Hutchison’s receipt for cash, in order to convey Wm. Smith, lunatic, to Brooklyn</td>
<td>$75</td>
</tr>
</tbody>
</table>
November 13: C.W. Murdaugh, services rendered in going to and returning from Washington city, to procure use of the Hospital from the General Government $25

November 13: Anderson, slave, use of horse and feeding same $9

November 14: Miss Barrett, for caps for orphans $2.50

November 14: Norfolk Howard Association, for Norfolk orphans (half of contribution from Lancaster, Pennsylvania) $1.50

November 20: J.G. Hodsden’s bill for coffins, raised top, plate, Box and hearse, $13 each, flat tops and plain $10, mattresses, &c. as per bill $303.25

November 28: Bob Butt, grave digger $1289.60

December 3: Hospital, whitewashing rooms occupied By sick citizens $27.75

December 4: John Nash, Esq., trustee, for 10 lots in square No. 3, 2 lots in square No. 2, 4 lots in square No. 5, 5 lots in square No. 10, one-half square No. 14, and 2 Lots adjoining, on the west of the Ravine, As burial ground for the dead who died By the yellow fever in 1855, all being lots in Oak Grove Cemetery $480

December 5: J.M. Freeman & Son for watch stolen from Sister of Charity while at hospital $35

December 10: J.N. Schoolfield’s bill for furnishing list Of dead $50

December 21: H. Stokes, for burying 598 persons $6767.89

December 22: Expenses of Committee fo Common Council of Portsmouth in relation to Orphans $42

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December 28:  This amount appropriated to the Humane Society of Portsmouth to purchase wood for the poor $2000

December 29  Moses P. Young, shoes for orphans $9.25

Report of the Portsmouth Relief Association