A SHORT HISTORY OF THE SWEATING SICKNESS

By MANLEY BRADFORD SHAW, M.D.

BALTIMORE, MD.

I. Introduction

THE disease known in the annals of medicine as the Sweating Sickness first acquired its name in England in the 15th Century. Not until after its last appearance there in 1551, was an English treatise published concerning it. Its successor appeared one hundred and sixty-one years later in the character of a less virulent plague except in unusual cases. Today it is only a remnant of the original disease, and virtually devoid of danger.

Like the prophet in his own country the Sweating Sickness received no recognition from the physicians, but the numerous names (see Appendix) by which it was identified and the records of its malevolence attest to its importance. The "morbus cardiacus" of Asclepiades, Celsus, Galen, Aretaeus, Oribasius, Aurelianus, Alexander of Tralles, and Aetius, which attacked the ancients displayed symptoms corresponding to those of the sweating sickness. The English visitation produced the nomenclatures "Sudor Anglicus," "Sudor Britannicus," "the Sweat," the "Sweating Sickness," "the Ephemera of Caius," and also this curious entry in the parish register of Loughborough: "the swete, called new acquaintance, alias stoupe knave and know thy master." Because of its rapid spread during one epidemic (1528) it was also known as "the Posting Sickness."

The Germans called it "der Schweissfriesel," "Friesel" (confused with many diseases), "der Englische Schweisssucht."

"Suette Miliare," "Suette de Picardy," "Suer Anglaise," were some of the many French names for the same sickness.

In Italy and Sweden, respectively, it was termed "Suette Migliare" or "Febbre Migliare," and "Englische Sved."

II. The Sweat of the Ancients

There are references to a sweating disease among the works of the early Greek physicians and their contemporaries. Pothet, in a very interesting account of the disease, calls it "La Suette Ancienne, ou Morbus Cardiacus, ou Diaphores." Hippocrates, he says, has described miliary vesicles (5th century), while these others: Asclepiades (1st century A.D.), Aretaeus (2nd century A.D.) and Erasistratus (300 B.C.) described the cardiac symptoms "tumeur une obstruction du cour d'ou son nom, νοσος καρδιακη" Other authors whom Pothet has found mentioning this disease are Celsus (1st century A.D.) "de medicina, de cardiaco," Aretaeus (2nd century A.D.) "de curatione cardiacum," Oribasius (325–400 A.D.) "de cardiaco," Alexander of Tralles (6th century A.D.) "de effectu cardiaco," and Aetius (beginning 6th century A.D.) "de cardiaco." A reference not vague, however, is the account by Coelius Aurelianus in the 5th century A.D. (some put him in the 1st to the 3rd centuries). The English accounts of the sweating sickness tally very closely with Pothet's translation from the work of Aurelianus. This we shall quote:

The disease of the heart attacks more men than women, and principally the vigorous and plethoric type. It begins with a violent fever, the pulse is frequent, fast and small and it remains so through the acute period of the illness and even to the end. A burning thirst developes, hallucinations, great nervousness, and at the same time the knees, the elbows, and the legs become cold and numb.

It is most often the case that men in good health show these symptoms, but those who are run down are also attacked. To these tendencies is added that medical state under the influence of which asthenique conditions and lymphatic constitutions are multiplied.

When the disease becomes established its characteristics will be fully recognized.

It presents a sensation of cold and lethargy, which attacks the joints of the arms, the legs, the whole body. The pulse becomes quivering, unequal, and even disappears entirely.

The reason is affected, a profound despair seizes the patient, insomnia is sometimes noticeable. The whole body is covered with a heavy sweat. In the case of these, the sweat first appeared on the neck, the face and shoulders, being sticky and having the appearance and disagreeable odor of urine.

The respiration is short, painful, and it is accompanied by an intolerable oppression; the voice becomes feeble and tremulous, and the patient meanwhile believes himself suffocating. The chest expansion is painful, the tongue is very dry and cracked. . . .

When the attack increases it is observed that they have fainting fits. The nails become curved. In some, there is delirium, the heart palpitates violently, the face is pale, the eyes are sunk in the orbits.

A few maintain their reason until death, their skin shrivels, their eyes lacrimate involuntarily or run with pus, and the patient succumbs without ceasing to suffer.

If the disease does not end tragically, the pulse is relieved, the respiration becomes easier. The patient takes courage, begins to eat and falls into deep sleep, as with great fatigue.

We shall see that this is a very good description of the English Sweating Sickness.

III. Nature of the English Sweating Sickness

In order to know the character and the nature of the disease we may study the accounts from the contemporary authors. From Polydore Vergilio's description we may summarize thus: The patient is seized suddenly with a "fatal" sweat, with pain in the head and stomach, and a violent fever. His thirst is intense, and the feeling of heat so great that only a few bedclothes can be endured. The sweat, the violence of which lasts only twenty-four hours, has a foul odor. This latter fact may have been due to the uncleanly condition of the bodies, for as yet even the old family washtub had not come into general use in England. It is also a disease of relapses, although Vergilio is not very definite as to the number or severity. Moreover, no age is immune, although in most cases the robust, middle-aged persons are attacked.

No further light is thrown on the nature of the Sweat until the time of Caius in 1551 from whom we learn these facts: That the disease is not only a sweat but also a fever, the sweat being the result of the latter, accompanied with nausea, vomiting and fluxes. As to the symptoms, there is, first, pain in the arms and legs; second, a "grief" in the liver and the stomach; third, a pain in the head with delirium; fourth, "a passion of the heart"; fifth, a heaviness or torpor with an intense desire to sleep, moreover, "the senses in all parts therefore,

left heavy and dull." "Last followeth the short abiding, a certain token of the disease to be in the spirits." In his

any one locality, are characteristic of the disease.

The treatment first adopted was dis-

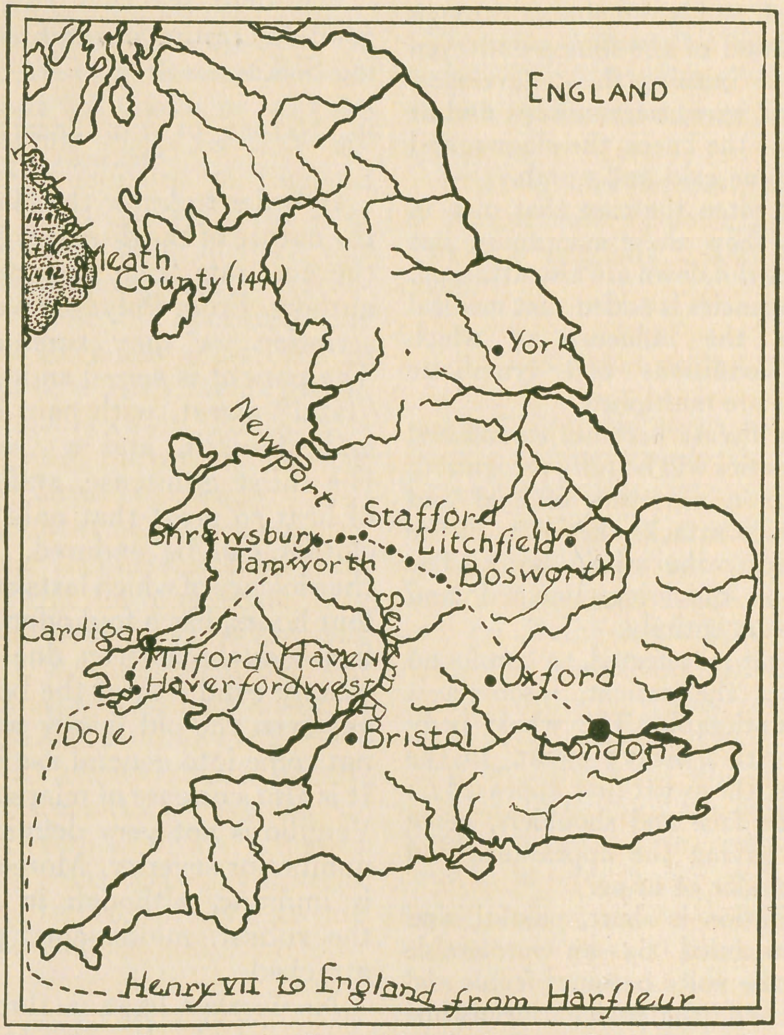

FIG. 1. MAP NO. 1. FIRST EPIDEMIC, 1485. PLACES MARKED ACTUALLY REPORTED THE SWEAT. THE SWEAT APPEARED IN IRELAND IN 1491 AND 1492. ROUTE OF HENRY VII FROM FRANCE TO BATTLEFIELD OF BOSWORTH INDICATED BY BROKEN LINE.

treatment, Caius admonishes those nursing to watch particularly for "a swelling or blackness in parts and a tingling of the same." This tingling and prickling sensation is noticed just before or along with the appearance of the rash in the suette miliare, and might suggest the presence of an eruption here. Also the very sudden seizure, and its short and violent course, along with the brevity of the epidemic in

astrous, and to it may be attributed the high mortality of the first epidemics. It consisted of such drugs as were considered sudorifics, and very strenuous physical measures of producing sweating, such as lighting a tremendous fire in the room and closing all the windows, heaping bedclothes and feather beds on the patient with two good strong men to aid, should the patient object. This severe treatment was used in the

Netherlands in the epidemic of 1529 and there derived the name "the Netherlands' Treatment." An English physician was residing there at the time and convinced the Hollanders of the folly of this method but not until a goodly number had perished. By bitter experience it was finally learned that the best treatment was one of moderation, that is, comfortable weight of bedclothes, reasonable amounts of water, neither too hot or too cold, a moderate room temperature, and general supportive measures. Upon no consideration should the patient expose even so much as a hand or foot, and to this precaution may be attributed the fact that no eruption was observed.

Hecker makes note of the fact that a worthy Dutch physician, during the epidemic of 1529, described small vesicles which appeared on the limbs after the sweat was over. These were not confluent but rendered the skin uneven. "Febrem sudor finiebat post se relinquens in extremitatibus corporis, pustulas parvas, admodum, exasperantes diversas et malignas secundum humorum malignitatem."[1] This same observation is noted in the Hamburg Chronicle with the addition that they had been seen on the dead.

> When care was not taken that the hands and feet were kept under the clothes they died, and their bodies became as black as coal all over and were covered with vesicles, and stunk so that it was necessary to bury them deep in the earth by reason of the stench.[2]

Thomas More's daughter was afflicted with spots during a recurrence of the sweating sickness, from which she subsequently recovered.[3]

Hecker's words on these eruptions are:

> By these it is very likely that a miliary eruption, and perhaps spots also, are to be understood, yet every thing militates against suppositions that the phenomena was constant or that the sweating sickness was an eruptive disease.

He maintains that both in the course and nature are the miliary fever and sweating sickness distinct.

IV. The Sweating Sickness in England

First Epidemic (1485)

This disease evolves as a distinct epidemiological entity at the beginning of the reign of King Henry VII. His accession to the throne was the result of the battle of Bosworth, August 22, 1485, where his troops defeated the forces of Richard III after a short and decisive battle. Previous to the time of the battle there are two references to the sweating sickness. Hecker says: " . . . the report of it had already before this event [Bosworth] spread unusual terror; so that Lord Stanley, when authoritatively summoned by Richard to repair to his standard, sought to gain time, and, by way of excuse, alleged the prevalence of the new disease." Other authors also mention this fact. J. E. Webb gives a reference from Drake's "Eboracum:"[4] "Wherein—all aldermen and such as were sojourning outside of York, on account of the plague, should repair to the city for council with Richard III against the invader." This reference is dated August 1, 1485, or four days

[1] Tyengius in Forest, p. 1586.

[2] Straphorst, Part II, Vol. I, p. 83, from Hecker.

[3] Straphorst, Vita et obitus, Thomas More, C 6, p. 26.

[4] 6, i, p. 120.

before the battle of Bosworth. That this plague is the "sweating sickness" one cannot be sure. There are statements to the effect that the "sweating sickness" was prevalent among the troops of Henry VII and although these are made rather by inference than by fact, it seems to be justified.

After the battle Henry proceeded at once to London and here the army was probably disbanded according to the custom of the day. That this move was a grave one with regard to the spread of the disease one can readily see, and particularly so since it is generally considered that the French mercenaries which Henry had obtained from Charles VIII carried the disease with them from France. It is a pertinent fact that these mercenaries came from the region in France which was to be the seat of the French "suette miliare" one hundred and sixty-one years later.

These French mercenaries were wandering guerrillas, "vile landsknechte," whom Hecker says were assembled under Henry VII's banner at Havre. They had recklessly pillaged Normandy under Louis XII, and Charles VIII was only too glad to be rid of them.[5]

After gathering about 2000 French troops, Henry set sail from Harfleur and landed at Milford Haven seven days later. For his route of march to Tamworth where he camped until the battle of Bosworth (see Map No. 1). Throughout this march, which lasted three weeks, his force was augmented with partisan English so that any disease carried by the mercenaries would certainly be transmitted to the English troops. This rather rapid advance is perhaps the reason why we hear no definite account of the disease, as it was not given opportunity to spread.

Caius says the disease began shortly after the 7th of August and lasted all that month and all of September. The Sweat reached London the 21st of September according to Hecker and lasted five weeks. A large part of the population fell sick but of the actual mortality there is no record.

Hecker states that it spread over all of England with the same severity as in London. Creighton says that the only definite references in regard to its spread are from Bristol Calander, Croyland Abbey, and Oxford. Its exact extent is uncertain.

J. C. Webb tells us that it appeared at Oxford at the end of August and lasted six weeks, killing most of the students and making the rest leave. He gives the date of its appearance in London as the 21st of September, but thinks it had abated enough by the 20th of October to allow the coronation of the king to take place. On the 11th of October, Mayor Thomas Hill was seized and died, and he was followed eight days later by his successor, William Stokker. It was also fatal for several aldermen; six is the number reported by Grafton, and Stow states four. Abbot Lambert Fossdyke died within eighteen hours after onset on the 14th of November. The plague did not become quiescent until December, 1485.

That it was severe we know from the work of Polydore Vergilio, an Italian scholar and man of affairs who came to Henry VII's court in 1501, and who described the epidemics of 1485 and 1508 (see Appendix). He says that out of those who sickened, not one in one hundred escaped.

[5] Mézeray, To. II, p. 762.

The same year a new disease pervaded the whole kingdom, during the first descent of Henry into the island; a pestilence horrible, indeed, and before which no time of life was immune, a fact that is well known; suddenly a fatal sweat attacked the body, vexing the body with a pain in the head and stomach and a terrific heat.

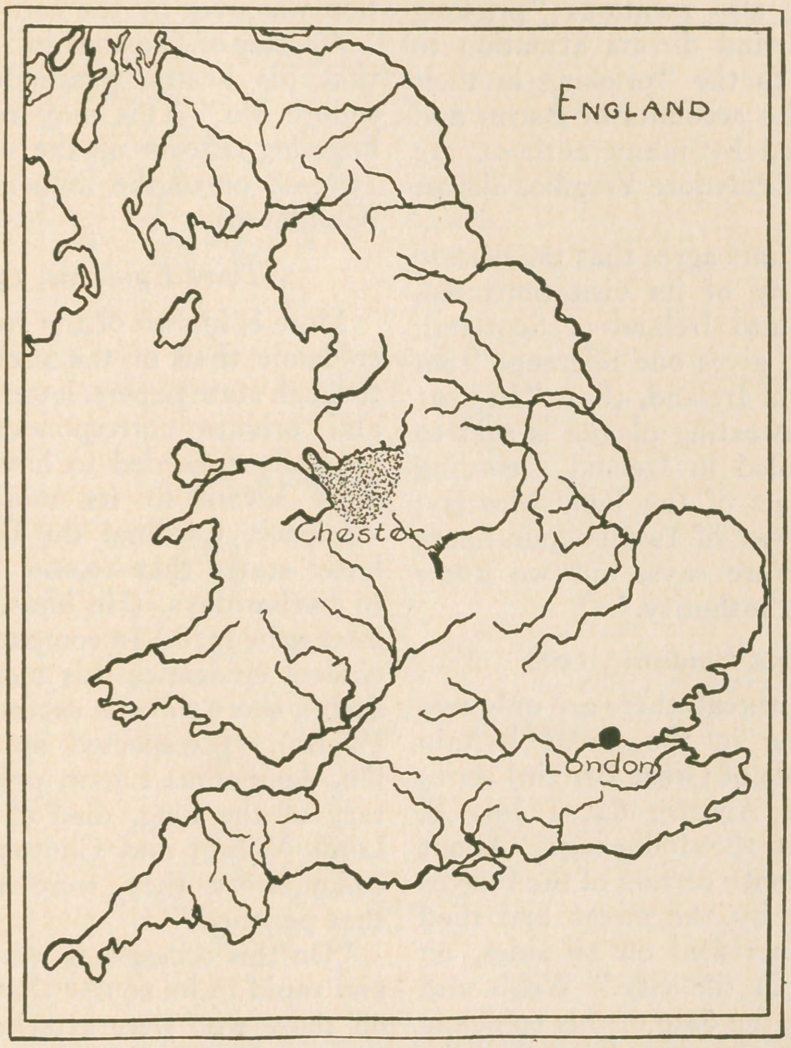

Fig. 2. Map No. 2. Second Epidemic, 1508. Places Actually Reporting the Sweat Are Indicated.

It was attended also, according to Vergilio, with a great thirst, sweat of a foul odor and its duration was exactly twenty-four hours.

The sick were subject to relapses or re-infections and exposure to very cold or very warm air was fatal. They discovered that the provoking of a sweat by heat and heaping on of bedclothes was harmful and that the best course was to be moderate in the amount of clothes, drink, and food, as well as in temperature regulation. In regard to an eruption Creighton quotes Forrester:

> . . . and this sickness commeth with grete swetying and stinking, with a redness of the face and all the body and a contynual thirst, with a great heat and headache because of the fumes and venoms. . . . And some had black spots

as it appeared in our brother Alban, a noble leech on whose soul God have mercy.

Forrester also mentions "pricking of brains," and directs attention to the heart, to the "pricking in their bodies." The accounts of Bacon and Hall, quoted by many authors, are taken from Polydore Vergilio, almost verbatim.

Most authors agree that the disease never in any of its visitations disseminated into Ireland or Scotland. J. C. Webb gives one reference from the Census of Ireland, 1851. "In 1491 or 1492 a sweating plague is said to have prevailed in Ireland according to the annals of the Four Masters; its attack was of twenty-four hours duration, Ware says, but we know not in what authority."

Second Epidemic, 1508

Of this outbreak there are only two records. One in the Great Britain Rolls (Annals of Great Britain) series by Bernard Andree, dated July 8, 1508, states the following: "About this same month certain of the thieves were seized by the sweat and died and many perished on all sides, on the streets in the city." Webb and Hecker give the date of this epidemic as 1506. Creighton explains this discrepancy by the fact that Hall's Chronicle was taken from P. Vergilio and not very carefully copied by Grafton before it reached Hecker's hands. Webb bases his date, however, on the Annals of Chester.[6] This gives an account of 71 persons dying in a day, four or five of whom were women. Another account, he reports, tells of 91 deaths at the same place in three days. Creighton gives the date of the Chester epidemic as 1507 with a mortality of 91 in three days. Hirsch says that in 1507 the Sweating Sickness broke out in London. All agree that this visitation was over by the end of autumn.

A letter of Erasmus in 1511 reveals that his health was indifferent "a sudore illo." This may refer to the lingering effects of the epidemic of 1507–08 or to the influenza of 1510 (Creighton).

Third Epidemic, 1517

More is known of the sweep of this epidemic than of the previous ones, through state papers, letters of envoys and private correspondence. It is generally conceded to have been the most severe in its mortality and virulence. Cardinal du Bellay in a letter states that 10,000 died in ten to twelve days. (He himself had the disease in 1528.) In comparison to the cholera epidemics this mortality, for such a short time, is exceedingly high (Webb). It respected no station of life. Ammonius Lucca, private secretary of the king, died of it, as did Lords Wilton and Clinton. "Of the commonsort they were numberlest that perished."[7]

"On this occasion it was so violens and rapid in its course that it carried off those who were attacked in from two to three hours, so that the first shivering fit was regarded as the announcement of certain death." (Hecker.)

Hecker gives the date of the beginning of this epidemic as July, 1517; Hirsch, July, 1518, which is obviously wrong; however, in Creighton's work we have very definite dates. The Nuncio wrote from London to the Marquis of Mantua on the 1st of August, 1517, mentioning the beginning of the disease. In his letter of the

[6] Ms. No. 2125.

[7] Godwyn, p. 27.

6th, he devotes three pages to the topic of sweating sickness. In the correspondence of the Venetian ambassador to the Doge, we have references on the 6th and the 12th and 27th of August. Cardinal Wolsey had the disease at this time and went to the country on the 21st of August. He wrote on the 26th of August that the plague was making progress. A letter to Wolsey on the 2nd of November, from the University of Oxford, excuses the delay in writing because of the "sweating sickness."

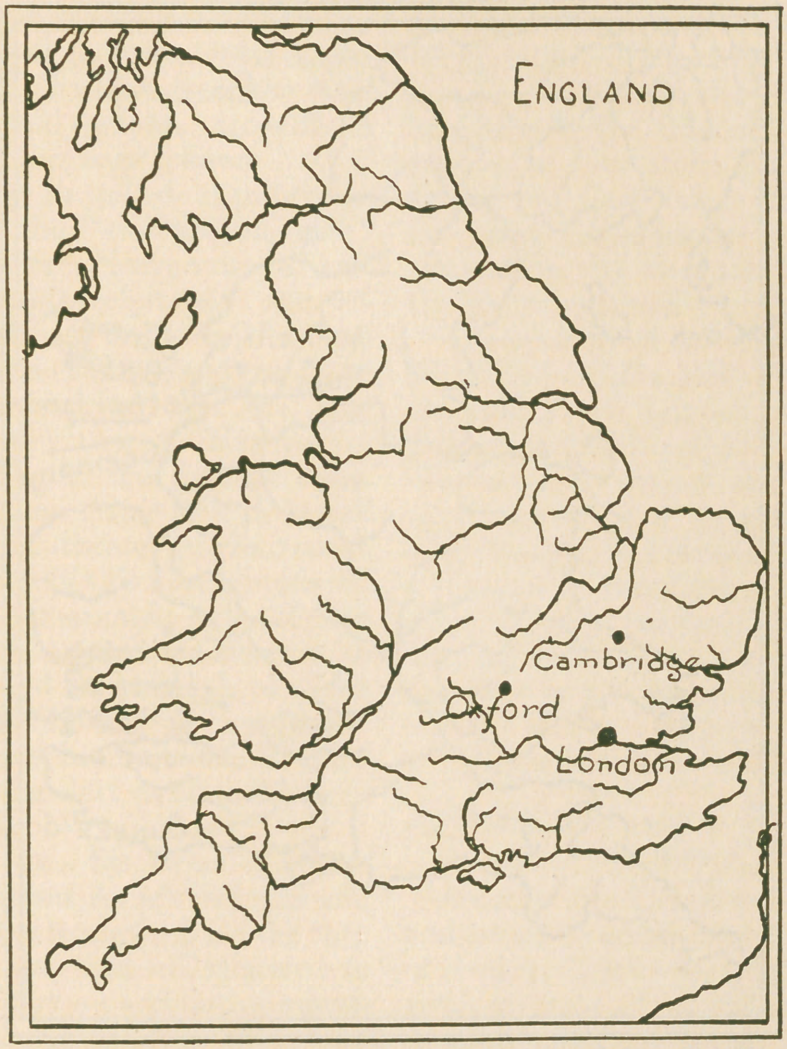

Fig. 3. Map No. 3. Third Epidemic, 1517. Places Actually Reporting the Sweat Are Shown. From These Places It Probably Spread over All England.

There is some question of the spread of the disease to Calais at this time. Some hint that the English inhabitants there were afflicted but no positive facts are at hand. No records of its being in Scotland or in Ireland are known.

It was a lengthy siege this time. According to Hirsch and Hecker this plague lasted six months. C. G. Grunner and Caius give its existence as from July to December, 1517. This evidence of hanging on is unlike its other appearances, being usually more "ephemeral" in nature.

Fourth Epidemic, 1528

In 1528 the sweating sickness outgrew the confines of England and spread throughout the Continent, sparing the more southernly located countries. This occurred about six months after the end of the English outbreak, as we shall see by noting the events chronologically.

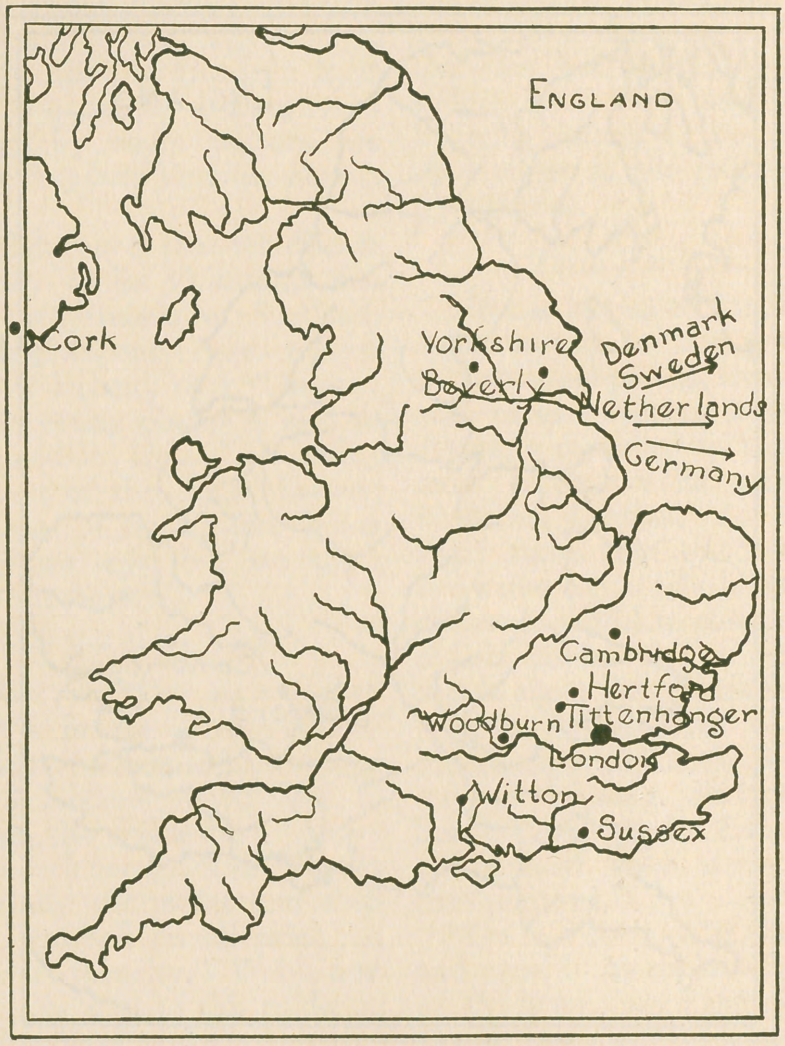

FIG. 4. MAP NO. 4. FOURTH EPIDEMIC, 1528. AREAS MARKED INDICATE LOCATION OF THE DISEASE.

The literature on this epidemic is considerable. In England there are many references in the contemporary writing. On the Continent, the disease called forth a flood of pamphlets, for it was not long before (1450) that the printing press first made its appearance.

Hecker gives the first date of its appearance in London as the Latter part of May, 1528. Creighton says its first warning was the 5th of June. Webb, on the other hand, finds Hecker in error again, and declares that its first showing in London was the 14th of June and that it had been rife farther north before that: "For Sir William Parre, writing to Wolsey on the 31st day of May informs him that the Duke of Richmond had removed to Lediston in Yorkshire, by reason of

its prevalence, which place was three miles from Pontifact." It was, incidentally, from an unpublished letter of Du Bellay in the Cottonion Collection, to which Webb has had access[8] that we learn of its spread from Sussex to London, and which gives the most interesting and graphic account. A summary of this is as follows:

Anne Boleyn's maid de chambre was seized with the "sweating sickness" on June 18, 1528. Henry VIII, on hearing this, fled precipitately and arrived at Waltham in Essex. Here two of his valets de chambre and two court ushers were stricken and the king again fled, this time to Hunston in Hartfordshire on the 21st of June. About this time, Anne Boleyn herself contracted the disease, but recovered. "The occasion of this illness produced one of that remarkable series of love letters which have since become so celebrated, and the originals of which are preserved in Rome. Happy, indeed would it have been for the ill-fated Anne, had the dart penetrated more deeply." (Webb)

A letter from Sir Brian Tuke to Wolsey mentions Anne's sickness and that of Lord of Rocheford. On the 29th of June, Wolsey himself removed to Hampton Court on account of sweating sickness.

The king, meanwhile, in the course of his flights, reached Tittenhanger in Hertford, where on July 1st two new cases appeared.

In another letter of Du Bellay it is stated that 45,000 have been attacked in London, 2000 of whom have died. In a letter of July 21st he states that the "Sweating Sickness is abating."

Creighton, quoting a letter of a Dr. Butts, says that 40,000 persons sickened in London by the end of June and 2000 died. Creighton also notes the interruption of the affair between Henry VIII and Anne Boleyn by the sweating sickness. As definite reference to the disease he gives Woburn as being attacked the 26th of June, a nunnery at Wilton, the 18th of July, and Beverly the 22nd of July. It was serious in Yorkshire generally, appeared in Cambridge the 27th of July and in places in Kent on the same date. By the 21st of August, Creighton reported the plague quiet.

The severity of this visitation may be judged by Du Bellay's figures of the epidemic in London and the fact that court was dissolved and in flight. The king and council also prohibited the feasts of St. John and St. Peter, and all public business was postponed.[9]

Though at this time, the disease is generally supposed not to have visited Ireland or Scotland, Creighton calls attention to a reference to a C. Smith, M.D.[10] which indicates that the sweating sickness visited Cork in 1528.

Spread of the Sweating Sickness to the Continent

According to Creighton (1891) who had access to other records than those of Hecker, Calais was attacked on the 10th of July, 1528. Hamburg was attacked July 31, 1529 (Creighton) and blamed its sad fate on the visitation of "one Captain Hermann Evers." On board this gentleman's ship, in passage from England to Germany, twelve persons were victims of the disease, some of them dying after reaching Hamburg. In this place forty to sixty people died every day with a total of 1100 for twenty-two days. The peak of the disease was passed in two weeks with a death rate of 2000.

[8] By Haliwell Imp. Lib. of Paris.

[9] Hall's Chronicles, Henry VIII p. 750.

[10] Ed. 2, 1774.

By the 8th of August the epidemic was at end. (Hecker)

Lubeck was attacked at about the same time (27th of July, 1529; according to Creighton, the 14th of August), when a woman died of the sweating sickness on that evening. According to Hecker's account from the Chronicle of Lubeck, the inhabitants died "without number." "In general, as everywhere, the robust young of the better classes were afflicted, while children and poor people living in cellars escaped." (Reimar Koch)

After this the spread is very rapid and erratic, though its general progress is in a radial direction, to the Northeast and South.

The sweating sickness appeared at Twicham, Bremen and Verdun by the 14th of August, at Mecklenburg and Stetten, Wismar, Demmin, Rostock, Stralsund and Greifswald around the 27th of August. On the 1st of September, Danzig, Augsburg, Cologne, Strasburg, Frankfort on the Main, Marburg. Göttingen and Hanover, all show evidence of the presence of the disease. At Strasburg, 3000 were taken ill but few died. Creighton says that by way of Hanover "the Sweat" traveled to Brunswick, Luneburg, Waldeck, Hadeln, Einbeck, Westphalia, Valley of Weser, and east Friesland. It reached Frankfort the 11th of September, and Worms shortly after. During the later part of September, Zwingli and Luther at conference on the doctrine of the Eucharist, fled hastily from Marburg.

At Augsburg it appeared on the 6th of September and lasted six days, afflicting 1500 and killing 800.

A large fair attended by merchants from all over Europe was held at Frankfort on the Main during the sweating sickness and Hecker suggests that this may account for the diffusion throughout Europe.

Creighton thinks that the further progress of the disease was as follows: Konigsberg, the 8th of September, Julich, Liege, and Cologne, the 15th of September, Speyer on the 24th of September, Freiburg in Breisgau, Mulhausen, and Gebweiler in Alsace in October. In November it overran the shore of Lake Constance, Wurtemburg, Baden, the upper Rhine, and the Palatinate. Provinces reached later were Franconia, Thüringen, Saxony, the Saxon Metal Mountains, Meissen, Mansfeld, Halberstadt, Magdeburg, Wittenberg, Lusatice, the Mark of Brandenburg and Silesia.

In Vienna the siege of Sultan Soliman was complicated by the presence of the sweating sickness from September 22 to October 14. In Switzerland, Berne, in December and Basle in January, 1530 were touched by the disease.

In the Netherlands it appeared the 27th of September, 1529, having made its way there from the regions about the upper Rhine. The dead in Antwerp numbered from 400 to 500, in the last few days of September, and at Zierikzee 3000 were said to have died subsequent to October, 1529. (Creighton)

On the 29th of September, 1529, Copenhagen was the scene of the plague, resulting in 400 deaths in a short time. Elsinore, according to report, suffered greatly. Denmark was next in the path of the sweating sickness, and finally the whole of the Scandinavian Peninsula fell victim. (Hecker)

It is also known to have spread into Lithuania, Poland, Livonia and Russia. Thorn and Kulm suffered, it is known. (Creighton) To what extent these countries were affected and the nature

FIG. 5. MAP NO. 5. SWEATING SICKNESS IN EUROPE IN 1529. COMPARE WITH MAP NO. 9, REPRESENTING THE SUETTE MILIARE FROM 1712–1929.

of the disease and its spread, we have no knowledge.

The descriptions of the disease on the Continent are similar as to its nature, symptoms and effects and the records of Ericus Cordus, 1529, L. Erdiman, 1597, J. Vandenkasteele, 1529, agree with those of P. Vergilio. The principal works concerning the continental manifestations, about twenty-one in number, are collected by C. G. Grunner in "De Scriptores Sudore Anglico."

Fifth Epidemic, 1551

This last scourge in England brought forth two treatises by a physician of the time, one Dr. Caius, who was practicing in London. Caius informs us that this outbreak began on the 15th of April, 1551, but a Ms. Chronicle of the town of Shrewsbury gives the 22nd of March (Webb, J. C.). The mortality was so great that one author (Godwyn) calls it a depopulation. One town, probably Shrewsbury, lost 960 within a few days. It spread to Ludlow, Presteign, and other places in Wales, thence to Westchester, Coventry, Drenfordi and the south before it reached London on the 7th of July. At the town of Loughborough, Leicestershire, in June, 1551, 19 persons died of the "sweat." Sixty students at Oxford were taken (Creighton). It was at its height from the 9th to the 19th of July, in London, and was not entirely gone until the 30th of July. Between the 7th and 30th, says Caius, over 800 died. Of these 600 succumbed between the 9th and the 16th. Machyn, a citizen resident of London, states that the Chancellor certified 872 deaths in the interval of the 8th to the 19th (Webb).

In July, also, it visited Cambridge, Huntington, Gloucester, Bristol, Devonshire. In the north, York, Hull, Lancashire, Ulverston were attacked by the "sweat" in August, with a definite reference to the date as the 7th of August at Leeds (Webb).

"Many who could afford it fled from their fever stricken county to Ireland, Scotland, France and the Netherlands."[11] There are uncertain references to the disease among the people who fled from England, in these countries, and also in Spain (Hecker). Brassavolus in "de morbo Gallico" mentions a sweating sickness in Flanders, 15th of September, 1551. There is some doubt, however, as to the identity of the disease (Creighton).

The disease diminished in virulence towards the end of August and disappeared in September and has never since returned in a like form.[12]

v. Nature of the Suette Miliare

We will consider now the identity of the Sweating Sickness and the Suette Miliare of the French which occurred in the 19th century. This descendant of the sweating sickness, or perhaps the sweating sickness itself, mollified with the course of time, retains many of the characteristics of the English plague. From a record of an epidemic in 1832, described by Meniére, we will quote:

> Women more than men, and robust adults, more than the children or the aged, were attacked. The attack began usually at night, with headache, sweating and dyspnea. These three things were always present but varied in intensity. The sweating in general was very abundant, skin hot, very red and itching, pulse large, slow and soft. The tongue was covered with a viscous mucus. There was a sense of weight in the precordia

[11] Shrop. Arch., Trans. Vol. 8, 1885.

[12] See report of cases, Part VII, Isolated Cases.

and powerful abdominal pulsations were noted.

The headache was located in the forehead or vertex. In some instances the sweating was enormous, necessitating a change of linen twenty to thirty times in a night, and continuing for three or four days. It's smell appeared to be similar to chloruret, or the egesta in cholera. The abdomen was soft, stools seldom and solid, urine scanty, with no change in physical qualities. The sweating lasted from four to six days or more. In general, a vesicular eruption appeared on the 2nd to the 4th day, on the chest, neck, wrists, and back, and successively on the rest of the body, which sometimes was repeated. The size of the vesicles varied considerably, and the fluid they contained was at first limpid, then cloudy, and afterwards, milky. It was partially reabsorbed and partially effused by rupture. The eruption lasted five to six days and convalescence followed so the disease never lasted more than a fortnight. The convalescence is rapid. In this epidemic there were no cerebral symptoms.

Fig. 6. Map No. 6. Fifth Epidemic, 1551. Places Actually Reporting Sweating Sickness Are Indicated.

Ouvrieu in 1906 gives us additional data on the physical findings. With the dyspnea there were bronchial râles, disseminated, and on both sides, also a sense of suffocation and a feeling of constriction in the epigastrium. A cardiac murmur, an organic, blowing third sound was heard. The pulse was

140. High points of temperatures of three different individuals were 40.5°c., 40.8°c., 40.9°c. There were muscular cramps of the feet and hands, and fibrillary twitching of the facial musculature. Dysuria and albuminuria were found. There was intense lumbar pain at the least movement. A slight coryza was noticed.

Osler, in his System of Medicine, gives the following symptoms: The onset is abrupt with or without prodromata, the cardinal symptoms being fever, excessive, continous sweating, great anxiety and depression with rapid and often tumultuous heart action and respiratory distress. After three to four days a rash appears, and with this the fever subsides slowly and slow recovery follows. Death may occur in a few hours or from three to four days after onset. "There is little reason to doubt the essential identity of miliary fever with the 'sudor Anglicus' or sweating sickness which swept over England between 1485 and 1551."

From Nelson's System of Medicine we may add to the symptoms already described, the fact that the rash is sometimes observed in the mouth, that often there is epistaxis. Along with the sweating there is a great thirst. A prodromal symptom not mentioned before is a feeling of chilliness. (The blood picture shows constantly a reduction of hemoglobin and a reduction of the red blood corpusles. The white blood corpuscle count is about 14,000, polymorphonuclears, 71 to 83 per cent, eosinophiles 2.5 to 6 per cent, though in some cases (two out of five) they were absent. The other cells not remarkable. May-Grunwald-Panchrome stain. La Blaye.)

The epidemics are usually localized in rural communities and are noted for their sudden appearance and brief stay which is on the average of two weeks, although longer visitations are not uncommon. They occur in the spring, summer and autumn, very rarely staying in the winter. Excessively wet weather, particularly on the occasions when there are floods, seems to play a part in the inception of an epidemic. The disease has occurred, though, when there were apparently no associated circumstances.

We will tabulate here the similarities and the differences of the sweating sickness and the suette miliare. They are alike in:

(a) More or less sudden onset
(b) No prodromal symptoms
(c) High fever
(d) Copious and continuous sweating
(e) Headache, which was severe
(f) Dyspnea
(g) Severe cardiac symptoms
(h) Abdominal pain (epigastric)
(i) Great anxiety and depression
(j) Precordial pain and palpitation
(k) Abrupt origin of epidemics, and their short duration
(l) Attacks began at night (usually)
(m) Robust adults were the favorite victims
(n) The disease was epidemic
(p) Likelihood of relapse
(q) Peculiar odor of the sweat
(r) Retention of urine
(s) Nausea and vomiting might occur
(t) Purpural hemorrhages, occasionally
(u) Pains in the extremities
(v) Torpid or comatose condition as death approached
(w) Symptoms of central nervous system involvement in last stages
(x) General occurrence after floods and rainy seasons.

The English sweat differs from the suette miliare in:

(a) Its virulence and high mortality
(b) The fact that its vigor was over in twenty-four hours
(c) There was no definite mention of an eruption
(d) The disease was apparently not endemic
(e) It conspicuously avoided France
(f) The suette miliare conspicuously avoids England.

VI. The Suette Miliare

In France

No satisfactory explanation for the reappearance of the sweating sickness after one hundred and sixty-one years is forthcoming. Indeed, some authorities deny that it did reappear, among whom are Hecker, Ozanam, Littré, and Anglada. The consensus of opinion now is, however, that the suette miliare or Picardy sweat is a less malignant form of the sweating sickness.

The reasons for not believing in their identity are: The sudden disappearance of the disease and the extremely long period when it was not in evidence; the appearance of a rash of miliary vesicles in the Picardy sweat; the comparatively mild course of the Picardy sweat. However, the disease may have maintained itself for that period of time in many isolated, widely diffused, sporadic cases which were not recognized. The fact that the English physicians did not notice the breaking out on the sick, was perhaps due to their fear of exposing their patients. (Aurelianus and P. Vergilio make note of some sort of eruption.) Against the usual mild course of the later epidemics may be cited the unusual virulence of one at Rottengen in 1802 and the mortality of 20 to 50 per cent in some of the smaller localized epidemics in France, which displayed the characteristics of true "sudore anglico."

Hecker states, however, that there

Fig. 7. Febbre Miliare. Case Reported by Busacchi.* Patient Was Twenty-one Years of Age, Male, an Enlisted Soldier of the Italian Army. Attack Began with Feeling of Nausea and Uneasiness, Followed by Fever Which Rose as High as 39.5 C., When a Feeling of Constriction and Pain in Epigastrium Was Experienced, and Heart Palpitated Violently and Was Somewhat Irregular. A Profuse Sweat Broke Out Which Was Followed by an Eruption of Miliary Vesicles as Pictured. Picture Taken When Eruption Was at Its Height. This Is Reported as a Typical Miliary Eruption. (After Busacchi.)

may have been an epidemic of sweating sickness in Germany in 1652, the location of which he does not mention.[13]

At Montbeliard in 1712 a disease broke out which had all the marks of the Picardy Sweat. Foucart says, "which was of the nature as the English Sweat of the 15th and 16th centuries."

Of the further French epidemics we are indebted to Thoinot and Ribierre for a careful summary.

From 1712 to 1800 the sweat showed itself in four distinct, recognized groups which have been classified in the following fashion: (a) Northern Group; Picardie, Normandie, Ile-de-France, Orleanais, corresponding to the actual departments of Pas-de-Calais, Nord, comme, Seine-Inférieur, Eure, Calvados, Manche, Aisne, Oise, Seine-et Oise, Seine, Seine et Marne, Loiret. This group was in the 18th century, the greatest seat of the

* *Bull. d. rc. med. de Bologna*, 1917.

[13] Godfredi Wilschii, Hist. Med. —morbum continuens. Disp. d. 20, April, 1655, Lipsiae.

sweat, Picardie having been first attacked in 1718. (b) Eastern group: Alsace, Franche-Comté, Savoie. (c) Central Group: Auvergne. (d) Meridional Group: Languedoc where the epidemic of 1782, as told by Pujal, marked a disastrous passage of the sweat. [See Map No. 7.] The sweat established itself as an endemic disease in the 19th century in the following centers: in the North, a group is formed by the departments of Pas-de-Calais, Nord, Somme, Aisne, Oise, Seine-Inférieure, Eure, Seine-et-Oise, Marne, Seine-et Marne. On the West, a group is formed by: Indre-et-Loire, Deux-Sevres, Vienne, Charente-Inférieure, Charente, Dordogne, Lot-et-Garonne. On the East: Haute-Saone, Doubs, Jura, Isere. In the Center: Puy-de-Dome, Lozére. In the Middle: le Var, in one part; les Pyrénnés-Orientales, l'Herault et l'Ade, on the other part.

We do not enter into the details and exact localizations of these centers; we say only that the indication of a department as an endemic center does not imply that the sweat was endemic in all the departments; the centers are ordinarily located within a given department, disseminated at variable points and sometimes even localized at a very limited point.

As to great centers of epidemics we may mention: the epidemic of 1821 (Oise); epidemic of 1832 (Oise); epidemic of 1841–42 (Dordogne, Charente, Lot-et-Garonne, Tarn-et-Garonne, Deux-Sevres); the epidemic of 1849 (the sweat coincided with the cholera, covering a vast extent of French territory, but at disseminated points; Somme, Seine-et-Oise, Oise, Aisne, Marn, Meuse, Jura, Deux-Sevres, Haut-Vienne, Gers, Yonne, Meurthe-et-Moselle, Puy-de-Dome); the epidemic of 1887 (Vienne, Indre, Haut-Vienne, Deux-Sevres); the epidemic of 1901 which struck many cantons of Charente-Inférieure and Deux Sevres.

Speaking of the effects of the epidemics Thoinot says: "The epidemic of 1832 in the Oise, affected in a limited territory twenty-four communities and seized over five hundred people."

The epidemic of Perigord described by Parrot, affected in three arrondissements of Nontron, Perigueux, Riberac, twenty-four communities, and 10,800 people.

The epidemic of 1842 in Lot-et-Garonne, struck the arrondissements of Villeneuve, Agen, Marmande, and affected more than 2300 individuals.

The occurrence of the epidemic of 1887 does not contradict the facts acquired on the morbidity; in many communities the proportion is reported variously as follows: "1 to 4; 1 to 6; 1 to 12; 1 to 20."

In conclusion, on the topic of distribution of the disease Thoinot and Ribierre make this statement:

> We have not the documents for the rest (the more recent epidemics) but we are persuaded that the actual endemic center is of vast extent, and that the sweat is not an affection seen in extinction but a disease in progress, more ignored than absent.

Hirsch gives us the statement that between 1718 and 1874 there were 184 epidemics, 126 of which occurred in a strip of country in the Northeast of France. The remaining 85 have broken out in isolated spots (though sometimes widely spread) in a few regions in middle and south France, particularly in Auvergne, Allier, Dordogne, and Poitou.

The sweat has occurred in connection with other diseases, namely, cholera, smallpox, and scarlatina; with

the cholera in Picardie in 1832, and in Picardie, and Franch-Comté in Auvergne, in 1849. During an epidemic in Poitou in 1887, one case of the sweat was seen with the smallpox by Thoinot. In 1906, in Charente, smallpox occurred with the sweat,[14] adults having the sweat and infants the smallpox.

In Italy

The Suette Miliare or the Suette Migliare, as it is known in Italy, first gets vague mention there between 1715 and 1735. Hirsch declares that these references are confused with exanthematic fever, scarlet fever and other similar diseases. The first accurate account is, according to him, at Novara in 1775, by Allinni de Agustus. The Suette then became endemic over all the northern part of Italy. A. Montalano in a letter to a friend from Livorno dated August 10, 1850 describes the typical symptoms and the cure. A description of the Suette occurs again in 1871. In 1885 to 1886, this fever was given as the cause of 142 and 175 deaths respectively (Davidson, Febbre Migliare). A. Bussachi in 1917 reports a case and includes pictures of the vesicles. Shurr gives the following epidemics: Piedmont, 1717 and 1720, Cori, 1720 and 1742, Savigliani, 1753, Acqui 1726, Pignerol, 1730, Fossano, 1731, Nice and Rivoli, 1731, Zante, 1734 to 1744, Savigliani, Zante, and Suze, 1759, Valenza, 1755, Chambery (France), 1728 and 1758, St. Jean de Maurienne, 1741, Friouli, 1839.

[14] The dates for the more important French epidemics are as follows: 1712, 1718, 1782, 1821, 1832, 1839, 1841–42, 1845, 1849, 1851–54, 1857, 1862, 1864, 1866, 1880, 1887, 1904, 1906, 1909–10, 1912, 1922, 1926.

In Germany and Other Countries

In Germany, accounts of the disease are at Lubeck in 1732 and in 1742, at Rostock, 1734, Prague, 1735, Goslar and Halberstadt, 1737–1738, and Leimbach in 1752, according to Shürr. These early accounts are somewhat confused, however, with the vague Friesel and puerperal fevers. At Wertemberg, in the winter of 1801, a disease can be positively identified as the suette miliare (Hirsch). Persons succumbed in twelve to twenty-four hours (Shürr). The Schweissfriesel was seen at Giengen in 1820, at Baviere, Souabe and Franconia in 1825. Cholera appeared with the disease at Rothal in 1828, Steyermark, 1826, Munich, 1836–37, Tarnow, 1839, and Bavaria, 1844. Hirsch states the Suette had the character of an endemic plague in Bavaria in 1828, being found in upper Austria in 1836 and in Wegeleben in the circle of Oscherslchen in 1849.

There are newspaper reports of the disease in Switzerland at Basle, 1733 and Coire, 1744, but Hirsch says these do not deserve much credence. Newspaper reports from Biscaya in Spain at this time indicate the presence of the Suette, but again are not reliable sources.

In Belgium it occurred at Hennegan in 1838, and appeared with the cholera at Liege, Namur, Hotton (in Luxemburg) in 1850, and its final visitation in Luxemburg, in 1866, was coincident with cholera.

VII. Isolated Reports of the Sweating Sickness

Reports of cases from widely scattered points on the earth's surface occur in the more recent literature.

1. J. A. Lawrie, surgeon to the Glasgow Infirmary, April 28, 1846. Lawrie checks the symptoms and the

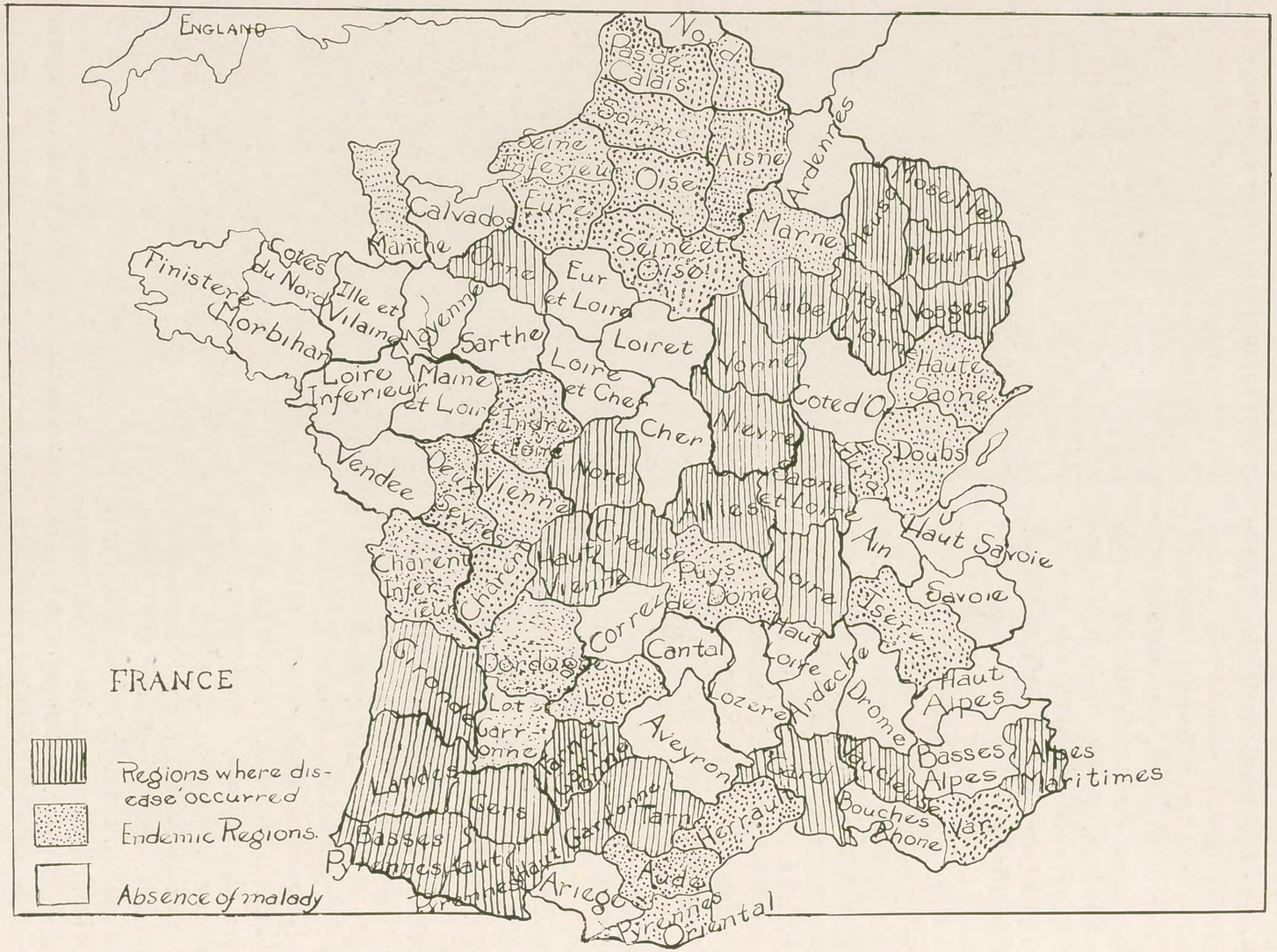

Fig. 8. Map No. 7. Suette Miliare in France, 18th Century.

course of the disease with the account given by Caius. No eruption.

2. J. Murray, assistant surgeon to the Bengal Horse Artillery, 1839. Reports cases coincident with cholera in which a profuse and fetid sweat occurred. The other symptoms are the classical ones of sweating sickness. No eruptions.

3. A. B. Shaw, practicing physician, Saint Louis, 1873. September 8, 1873. Case of German girl of thirteen. Rather a long prodromal course of chills and fever followed by a very profuse sweat and typical miliary vesicles.

4. G. F. Turner, military physician at Fort Snelling, reports an epidemic of miliary fever in the winter of 1842 among the children of the fort and among the Sioux Indians while on their winter hunt. The Indians were attacked irrespective of age or sex. In the memory of the oldest Indians the disease had occurred twice before. It was comparatively mild. There was no sweating but all the other symptoms were typical.

5. W. C. Douglas. Reports an epidemic of miliary fever in the vicinity of Boston, 1750. From his description he is most likely dealing with three diseases; diphtheria, scarlet fever and puerperal fever.

6. Sir Richard Blackmore, M.D., 1750, describes a miliary fever which seems identical with the French suette miliare (see Appendix). Sir David Hamilton, F.R.C.P., and a member of the Royal Society and Physician to Queen Anne, has a paper on the cure of the miliary fever in the same pamphlet volume, "A Subject to Mithridates, King of Pontus," 1751.

VIII. Cause of the Sweating Sickness

The causative agent of the disease is unknown. It is apparently infectious and contagious in nature, while the spread is analogous to that of influenza, in rate and manner.

The older accounts give the various cosmic phenomena, earthquakes, meteors, comets, plagues of insects, hanging suns, floods and innundations; or the presence of armed conflict in the land, with its trail of putrefying bodies; the vapors and mists arising from the swamps; and the habits, diet and living conditions of the people. As these were the cut and dried causes then given for all epidemics we will only consider them as interesting, and nothing more.

One practically constant feature is however, the occurrence of floods and innundations before the greater part of the epidemics. M. M. Chantemesse, Marchoux, and Haury have suggested a very plausible explanation of this. They blame the field mice as either the direct carriers or as hosts for infected lice. In a moderately wet season the burrows of these mice are not flooded, but when the deluge is so great as to cause many rivers to overflow their banks, the field mice are forced to flee their burrows and seek the human habitations for shelter. This explains very nicely the peculiar manner of spread in some instances, and the fact that the French epidemics are localized in rural hamlets. Epidemics not associated with floods could conceivably be caused by a local overpopulation of mice causing them to invade houses for food; or a local destruction of the natural source of their food might give the same result. Such local and general migrations of mice are known to occur.

Cultural methods on the blood, cerebrospinal fluid, and contents of the vesicles give negative results. Inoculation experiments on animals

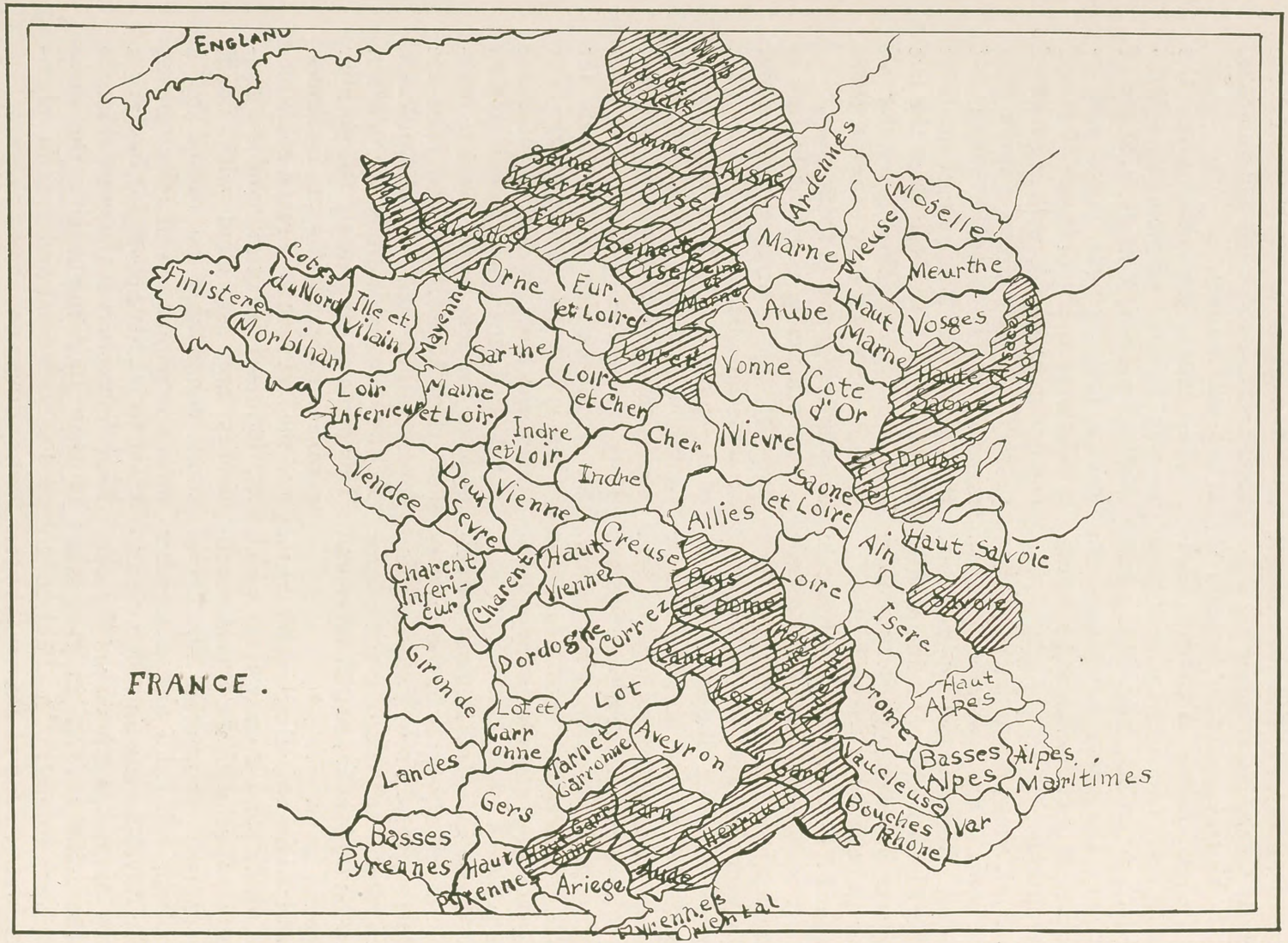

FIG. 9. MAP NO. 8. SUETTE MILIARE IN FRANCE, 19TH CENTURY. DEPARTMENTS INDICATED ARE THOSE IN SOME PART OF WHICH DISEASE HAS BEEN RECORDED. NOTE THAT PICARDY AND NORMANDY ARE ENDEMIC SITES OF THE SUETTE MILIARE, AND THAT IT WAS FROM THESE REGIONS THAT HENRY VII COLLECTED HIS ARMY FOR THE INVASION OF ENGLAND IN 1485. PICARDY: SOMME, PAS-DE-CALAIS, OISE. NORMANDY: ORNE, SEINE INFÉRIEURE, CALVADOS, EURE, MANCHE.

and man are also devoid of success. Microscopically, nothing is seen in these fluids. Hamill has found a motile coccus in the vesicular fluid and others have found a colon type of bacillus in vesicles and lymph nodes. This evidence is not convincing.

Le Blaye finds an eosinophilia in three out of five cases, suggesting that it may be of value as a diagnostic sign. It might raise a question of an animal parasite.

IX. Pathology of the Sweating Sickness and Suette Miliare

There is no record of any pathological finding on the English sweat, and the record available to us of the pathology of the suette miliare are of little value.

There was found, regularly, a congestion of the brain and the meninges, and a marked engorgement of the visceral blood vessels. The heart muscle is soft and flabby. The blood has been seen to be very dark and to have some change in its clotting properties. Shürr reports a gelatinous or fibrinous coagulation of the urine, also an increased vascularization of the semilunar and greater and lesser sympathetic ganglia and tenth nerve, with a yellowish coloration of the same.

Shürr states also that the liquid in the vesicles is yellowish and opaque and filled with a cellular debris. Some have found a fungus growth in the vesicular fluid.

The very important question of the state of the sweat glands seems to be entirely neglected. One author states that he considered the sweating to be of cerebral origin and not localized in the sweat glands.

One observer, according to Shürr, found vesicles on the pericardium and aorta.

It is agreed that the bodies putrefy very rapidly after death, an advanced state of decomposition being found within twelve hours after death.[15]

X. Diseases Related to the Sweating Sickness

We have mentioned before the confusion in the early German literature as to the distinctness of the disease; the early writers include puerperal fever, petechial fever, smallpox, and various other exanthematous fevers under the term of "Friesel." Allionius, an early Italian writer differentiates also arthritis, podagra, peripneumonia, miasmatic fever, putrid fever, intermittent fever, and "morbillus" from the suette miliare.

Cholera, however, holds the position of prime interest. Its appearance preceding, or following the suette miliare in France during a number of epidemics in the 19th century has led many writers to search for an explanation of their concurrence. No satisfactory relationships have been established. The two diseases have been observed at the same time in the same individual (Hirsch).

Roux has observed repeatedly aberrant forms of cholera, which he has called "cholera cutane ou sudoral." The typical cholera symptoms have been aggravated by an exceedingly profuse and drenching sweat, "the sweating form is not a form of the Indian cholera, but a new disease concomitant with cholera, which only exists with it, which requires especial name, and arranges itself outside the class of nervous diseases." An eruption was zealously looked for in these cases but was not found in any instance. Murray's cases at Malwah,

[15] An autopsy report is published in *Oesterr. San. Wes. Wien.* 13: 495, 1901.

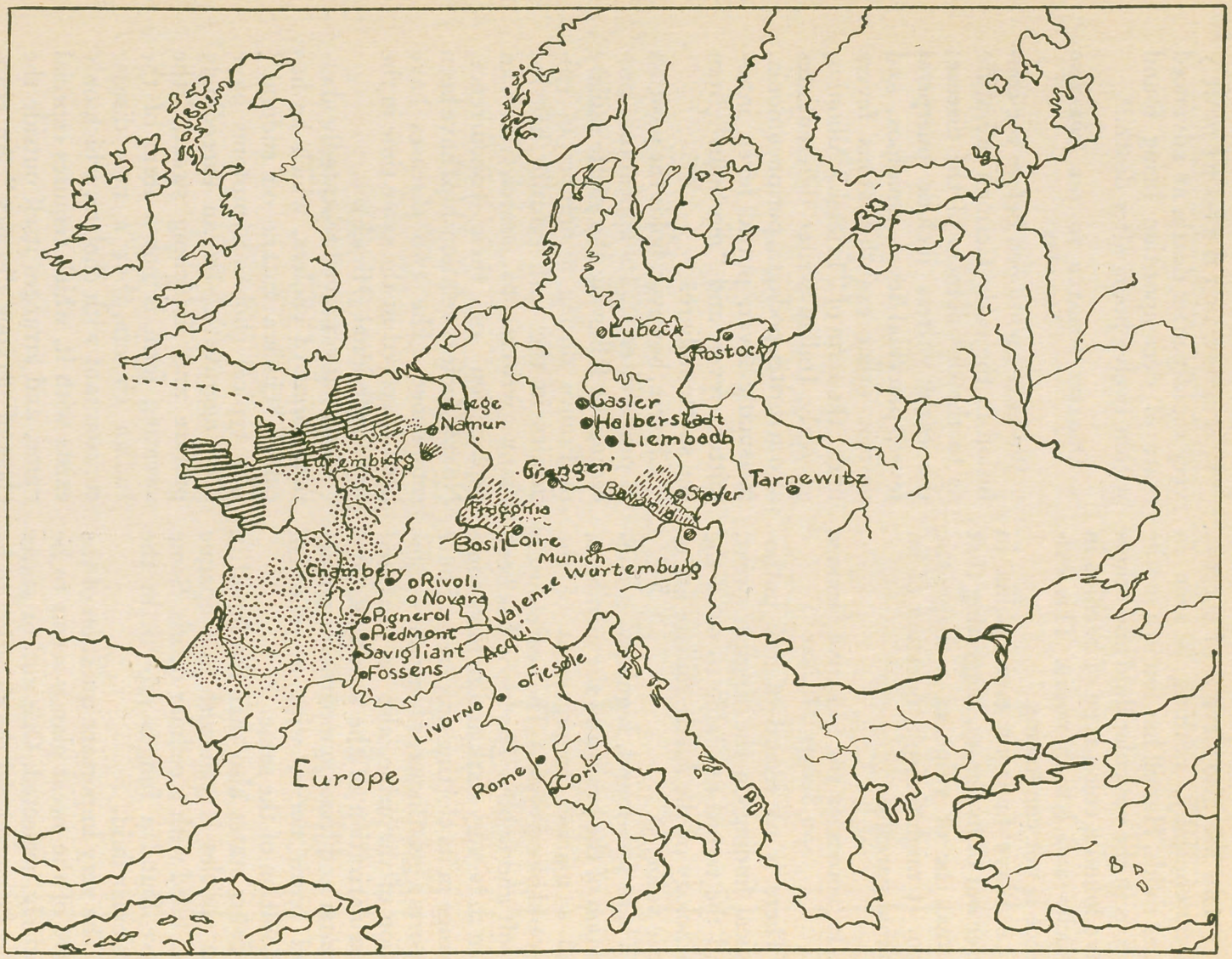

FIG. 10. MAP NO. 9. SUETTE MILIARE IN EUROPE, 1712–1929. LINED AREA SHOWS PARTS FROM WHICH HENRY VII RECRUITED HIS TROOPS IN 1485. DOTTED AREA INDICATES EXTENT OF DISEASE IN FRANCE. DASHES SHOW PREVALENCE OF SUETTE IN OTHER COUNTRIES. COMPARE WITH MAP NO. 5.

India, and Cullen's cases at Seoni, India are probably of this same species. Bonnescuelle de Lespinais has summarized the literature on this form of the disease in a Strasburg thesis. It has been called cholera of the skin.

Gerster[16] says that after careful re-reading of Hecker and by employing the method of exclusion he is convinced that the English sweat was one of the old virulent relapsing fevers, which are uncommon today. He supports this conviction by the relapsing nature of the disease and by the fact that its spread is similar to the liceborne relapsing fevers of the present day.

XI. Appendix

I. *Synonyms*

Cardiacus	Greek physicians
De peste Brittannica	J. Schiller
Der Englische Schweiss	German
Die Englische Schweiss-sucht	Gruner
Der Engelske Sved	Gerster
De miliarum morbo	Steinoch
Diaphoretici	Aurelianus
English Sweating Sickness	English
English Sweat	English
Engelshe Svetten	Gerster
Engelscke Sweetsiechte	Gerster
Englisher Schweiss	Gerster
Ephemera	Caius
Ephemera sudorifica Britannica	Gruner
Ephemera protracta	Gruner
Febris cararacia	Gruner
Febris continua	Gruner
Febris miliaris	Italian
Febris putrida Picardes	Bellot
Febris pestilens	Gruner
Febris putrida	Gruner
Friesel	German
Frieselauchslag	Immerman
Fiévre de Dunkerque	Thoinot et Robiérre
Hungerpest	Gerster
Hydronose	?
Hydropyretose	?
King of England's Sickness	?
La suette ancienne	Pothét
La maladie de terre française	Ovrieu
La maladie des faires	Foster
La maladie régnante	Crépin
La suette	Gerster
Miarola	Allionnius
Miliarum	Allionnius
Miliary Fever	General term
Miliaria	General term
Morbus cardiacus	Pothét
Morbus acutis	Pothét
Morbus Anglicus	Gerster
Morbus sudatorius	Gerster
Moteegiree	Indian (Cullen)
Nosocomica nanalis	Grünner
Paneegiree	Indian (Cullen)
Pourpre blanc	Allionius
Plaigh Allais	Irish-Census 1851
Plaigh iongnathack	Irish-Census 1851
Posting sickness	Creighton
Picardy suette	French
Schweissfreisel	German
Schweiss-krankheit	Gerster
Schwiessucht	German
Schwitzblattern	German
Schwitzende Seuche	Gerster
Sudor anglicus	English
Sudor Britannica	English
Suette miliare	French
Suette migliare	Italian
Sudamen (ezxema sudamen)	Immerman
Sver anglaise	Swedish
The Sweat	English
The Sweating Sickness	English
The swete called new aquaintance, alias stoupe-knave and know thy master	Parish Register Oughborough
The Great Dying	Gerster
The Great Mortality	Irish census 1851
Venum de terre	Chantemesse, Marchoux and Haury

II. *Quotations from Original Works*

Lack of space prevents the inclusion of many quotations fully as interesting as the following:

First Epidemic in England

"In this same yere a new kynde of sickness came sodainly through the whole region,

[16] *Johns Hopkins Hosp. Bull.*, 1916.

even after the first entering of the kyng into this Isle, which was so sore, so paynefull and sharp, that the like was never hearde of, to any man's remembrance before that time." Grafton Chronicle of England, 146–160.

"All in maner assone as the sweat take them, or within a short space after, yelded up their ghost."

"And in this his amendynge, one poynte diligently above all other is to be observed and attended, that he never put his hand or foote out of ye bed to refresh or coole him selfe. But I.v. yere after (1530) it sayled into Flannders and after into Germany, where it destroyed people innumerable for lack of knowledge of the English Experience." Halls Chronicles, Henry VII.

Description of the invading French army of mercenaries.

"A sort of vagabonds, rascals, and runaways,
A scum of Bretagnes, and base lackey peasants;
Let's whip these stragglers o'er the seas again;
Lash hence these overweening rags of France,
These famished beggars, weary by their lives."

—Shakespeare

A Dr. Forrester says: "And this sickness cometh with grete swetying and stynkyng, with redness of the face and all the body, and a contynual thirst, with a grete hete and hedache because of the fumes and venoms."

"Kynge Henry the Seventh entered the realme of England, and landyd at Mylford haven with his army out of Britayne in the monthe of August in the yere of our Lord 1485." The Chronicle of Calais.

"The King (Charles VIII) was then at Langeais who received him very kindly. And a great number of English, Landing every Day in the Ports of France to joyn him (Henry VII), he gave him some broken Companies that were in Normandy, with which he adventured over into England." Mézeray (1683).

"The sweating began the 21 of September, and continued until the end of October; of the which sickness, a wonderful number dyed, and in London besides others, dyed Thomas Hill, Maior, in whose place was chosen Stocker, who likewise deceased about 7 daies after; in which place departed other 4 Aldermen, Thomas Iland, Richard Rawson, Thomas Norland and John Stocker, and then was chosen Maior John Warde, who continued till the feast of Simon and Iude." Stowes Chronicle (1631).

Second Epidemic in England

"The same year (1485) a new disease prevaded the whole kingdom, during Henry's first descent into the island, a pestilence horrible indeed, and before which no age could endure, a well-known fact; suddenly a fatal sweat attacked the body wracking it with pains in the head and stomach, moreover there was a terrific sensation of heat. Therefore the patients cast off the bed coverings from the beginning, as some of them suffered less heat if they lay in bed; if they were dressed they stripped off their clothes, the thirsty ones drank cold water, others suffering from this fetid heat, provoked a sweat which had a foul odor, by adding bed clothes, all of them dying immediately or not long after the sweat had begun; so that not one in a hundred evaded it. Nor did any art of medicine or science avail to help it, meanwhile, for this strange disease escaped all their knowledge. In fact, after twenty four hours (the severity of the disease continued for that length of time) the sweat departed bringing this conclusion i.e. that they were not cleansed by the sweat as many of them perished. But that fact pointed out a final measure in the treatment for this great torture; those who had sweat once, since they sickened again, put into use those things which they had discovered to have been beneficial in the first attack. Evenso, when the calamity befell the sickly race again, (1508) from earlier observations they had forgotten how to care for themselves, in order that they might bear more easily the strenuous sweating. Thus from experience, after such a huge slaughter of human beings, it follows that the most prompt relief should have been found, which was this: if anyone was seized during the daytime he should go to bed forwith, with his clothes on; if, while he was in bed at night, he should lie quietly and not move from that place, remaining so for twenty four hours exactly, covered with not enough bed clothes to provoke the sweat but just enough to allow him to sweat spontaneously, taking no food, if possible to bear the hunger, and drinking no more water than usual or of less warmth, which should satisfy in a way and quench the thirst; in the first stages of this treatment care should be taken that there should be no occasion

either for warming up or cooling off the hands or feet as to do so means death. Such was the treatment found for this plague which covered so much of England at this time and in times past has so often afflicted it, for the first year that Henry began to reign was remarkable for the plague, which was taken by many as a bad omen." Polydore Virgilio (1570) (Translation).

Third Epidemic in England

"In the very ende of May began in the citie of London the sickness called the sweating sickness, and afterward were all the realme almost of the which many died within v or vi houres. By reason of this sickness the terme was adiourned and the circuites of the Assise also. The King was sore troubled with this plague, for divers dyed in the court, of who, one was Sir Frannces Paynes which was Ambassador in Spayne." Henry VIII.

"About the feast of Damias began the sweating sickness of the which many men died suddenly in the beginning thereof, and this plague continued till Michaelmas and many died thereof in the court, as the Lord Clinton, the Lord Grey of Wilton, and many other knights and gentlemen, by reason of which contagious sickness Michaelmas terme was adjoined. After this to wit, in the winter was a great death of pestilence, almost over all England, in every towne more or lesse, wherefore the king kept himselfe with small company about him, willing to have no resort to the cort for feare of infection." Stowes Chronicle (1517).

"In August and September, the Sweating Sickness (termed beyond the Sea, Sudor Anglicus, or the English sweat) began, a disease utterly unknown to former ages. Of the common sort there were, numberlesse, that perished by it. Of the Nobilitie the Lords Clinton, and Grey of Wilton. The symptoms and cure you may find in Polydore Virgilio in (Anno L Henry 7) who (as confidently, and I believe truely maintaines, that, this disease was never till then knowne to be, much less to bee mortall) as if there were a concatination of evills one evill seldome cometh alone. A Pestilence succeded this former mortalitie, and so raged the whole Winter season in most parts of the realme, that the King for feare of infection, attended by a few, was faine every day to remove his Court from one place to another." Godwyn, Francis (1630).

Fourth Epidemic in England

"Van de Augspurg ist der schweiss gangen in das Bayrlandt, von Bayren und Norgken, in Osterreich, Unger, Turchey, von occident bis gen orient alle landt durch, es sind vil leut hie aus der stat geflochen die zum tail daussen am schweiss gestorben sind." Martin, A. From Clemens Lendes (1529).

"Sudor Anglicus est febris ephemera maligna, epidemica a rarefactione elastica lymphae vaporofae volatilis praeternaturali, sudore debito magis subiagabilis." Leupoldo Erdmanno (1597).

"Whereas it seized upon them with a violent heat, and incredible anxiety about their stomach and head, insatiable thirst, and the sweat which ensued was noisome and stinking. This appears not only out of Polydore Virgilio, and Hollinshead but such physicians as writ of it . . . " Stubbe, H.

Fifth Epidemic in England

"It (the pain or disease) appeared on some first upon the neck and shoulders, in others upon the legs and arms. Others felt as if a breeze or breath of air were blowing through their limbs. Suddenly these persons dripped with a great sweat without apparent reason, unaccustomed as they were to this disease. They first began to feel warm internally, after which they burned, the heat having spread already to the most extreme parts of their bodies. An enormous thirst developed and wild agitation. The disease attacked the heart the liver and the stomach. All this was followed by a heavy dull pain in the head, by insane raving and delirium, and after this langour and an unconquerable necessity for sleep. For the disease was as violent as the poison of noxious air, because the mind was seized with fury and overcome with torpor. Then came a violent death.

"On the other hand, the sweat stayed on from the beginning in other cases, their limbs chilled easily; and also a breaking out occurred, after the sweating had diminished slightly accompanied by a foul odor, and some color, producing moisture, which diminished at times and again was copious and of thick consistency. The patients breathed rapidly and heavily of necessity. Some showed nausea, some vomited, but only a very few and only those who had eaten heartily, and they spoke groaningly. The urine was touched with color, was of thick consistency, and

elimination was uncertain, (there was nothing regular in character on account of the violence of the poison). The pulse, when tested was rapid and fluttering. These were certain indications of the sickness." Johannis Caii, "de Ephemera, Britannica Liber."

"When care was not taken that the hands and feet were kept under the clothes they died, and their bodies became as black as a coal all over, and were covered with vesicles, and stunk so that it was necessary to bury them deep in the earth by reason of the stench." Straphorst (from Hecker).

1750.

"At length after about seven or eight days, when he has taken to his bed, by means of copious and profuse Sweats, the miliary eruptions before mentioned appear on the Temples, the Neck and Breast, and sometimes spread over the whole body.

"The little red Eruptions grow by Degrees to Maturity, acquire white Heads full of Matter, and then grow dry, and die away, which course in the more kindly sort is accompliched in seven Days.

"These greate and profuse Sweats, that precede the Miliary eruption are by no Means such as critically discharge the Putrifaction that causes the Disease.—

"A second Fever and Eruption, I likewise know often succeed the first—.

"This brings to my Mind the ease of a Female Patient, who, at my first Visit, I found drowning, if I may so say, in those Sweats." Sir Richard Blackmore, M.D., 1750.

Table of Cosmical Phenomena, Epizootics, Famines, and Pestilences in Ireland (census of Ireland, 1851).

The Great Mortality.

"There was much wet and unfavorable weather in the summer of this year and the ensuing year; it resembled a deluge, so that the corn crops of Ireland decayed." Annals of the Four Masters (1491).

"Some of the annals record the pestilence of the Plaigh Allais, or the Sweating Plague under the year 1492, but it is likely that the disease spread over both years [1491–2]." Census

1491. "This year was commonly called by the natives the Dismal Year, by reason of the continued fall of rain all the summer and autumn, which caused great scarcity of grain throughout all Ireland. About the latter end of December, after the appearance of a blazing star, which shone for some days, a certain grevious and pestilential sickness, commonly called the 'English Sweat' (because it came from England into Ireland) began first to afflict this nation; which disease some of the physicians imagined to proceed from a certain malignity of the air, bred and caused by the often unhealthy mutations of the air." Ware's Annuals.

"The summer and harvest were so wet in Ireland that the corn could not be saved, and therefore a great dearth ensued, which was accompanied by a disease-called the Sweating Sickness which now came to be first felt and known in Ireland." Hibernica Anglicania.

1492. "An unusual plague (Plaigh iongnathach) in Meath, I.c. a plague of twenty-four hours duration; and any one who survives it beyond that period, recovered. It did not attack infants or little children." Annals of the Four Masters.

"The Baron of Slane, the great Lord of the Fleming, that is James Fleming, died this year, on the 20th of the month of March, of the Sweating plague (Plaigh Allais) which had newly come into Errin at the time." Annals of Ulster.

"The Baron of Slane, James Fleming, died of a Sweating Plague." Annals of Connaught.

1528. "This year a certain grievous pestilential disease, commonly called the English Sweat, did overspread a great part of Ireland; Hugh Ingey, Archbishop of Dublin and Chancellor of Ireland died thereof, among others at Dublin on the third of August." Ware's Annals.

"A malignant disorder called the Sweating Sickness in Cork." Smith's Cork.

"A pestilential sickness, called the English sweat which first appeared in Ireland in 1491 now raged in Ireland with great violence, and at Dublin swept away Archbishop Inge, Lord Chancellor; William Talbot, Richard Elyat, Richard Fitzwilliam, Walter Fian, and two canons Luett, with Stanihurst and great numbers of other citizens." Harn's Dublin.

"The Sweating Sickness, called Sudor Anglicus, was fatal to many of the Irish this year." Hibernica Anglicania.

Roettingen Epidemic, 1802

Hot summer succeded by incessant rain. "Strong vigorous young men were suddenly seized with unspeakable dread; the heart became agitated and beat violently against the ribs, a profuse, sour, ill smelling per-

spiration broke out over the whole body and at the same time they experienced a lacerating pain in the nape of the neck." Hecker.

Molwab Sweating Sickness

"They have been more decidedly of the character of a periodic remittent character, and often attended with a peculiar fetid perspiration, connected with a depraved condition of the blood. The perspiration was at the same time so profuse that it formed a prominent feature of the prevailing disease: which led me to think we have had to deal with the Sweating Sickness of Europe, and hence I have ventured to give it that name." Murray, I.

Prayer against the Sweating Sickness

"Non sudore,
Vel dolore
Moriamur subito."
Gent. Mag., 1786.

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