

Chapter 6

August Hirsch: As Critic of, and Contributor to, Geographical Medicine and Medical Geography

FRANK A BARRETT

Of all the nineteenth-century authors who examined the relationships between disease and geography, August Hirsch (1817–1894) was probably the most respected in his time, and is the best remembered today. During his career he was first a critic of, and then a contributor to, the literature on geographical medicine and medical geography. In the process he conceptualized the nature and scope of these fields. To evaluate his criticisms and to appreciate his contributions one should first understand the distinction between geographical medicine and medical geography and where geographical pathology fits into this framework. Geographical medicine is a sub-field of medicine. As such, its focus and organization is on a medical basis, but it examines how geographical phenomena influence disease. Hirsch was primarily interested in geographical pathology. Just as pathology is a sub-section of medicine so too geographical pathology is a sub-section of geographical medicine. On the other hand medical geography is a sub-discipline of geography. Therefore, its organization, the types of questions it asks and the approaches it takes focus on themes such as place, location, area, region and their geographical inter-relationships to disease, medical care, and nutrition.¹

This paper is largely based on articles and books written in German and which, with one exception, have not previously been translated into English.

Hirsch as Critic

In the decades preceding Hirsch's entry into the field as a critic, both Ferdinand Becker (1831)² and Heinrich Schweich (1846)³ had written critical articles on the development of medical geography. Becker had taken the position that the development of medical geography faced numerous challenges. First, the necessary

Frank A Barrett, Department of Geography, Atkinson College, York University, Toronto, M3J 1P3, Canada.

¹ F A Barrett, 'Medical Geography: Concept and Definition', in Michael Pacione (ed.), *Medical Geography: Progress and Prospect*, London, Croom Helm, 1986, chapter 1, pp. 1–34.

² Ferdinand Becker, 'Ueber medicinische Geographie', *Litterarische Annalen der gesammten Heilkunde*, 1831, 19: 129–41.

³ Heinrich Schweich, *Einleitung in die medicinische Geographie, Zwei Abhandlungen zur Practischen Medicin*, Düsseldorf, Stahl'schen, 1846.

data were not available and their geographical coverage was uneven. Second, of all the sub-disciplines of geography, medical geography would be the most difficult to understand because of the complexity of the relationships between diseases and environment. Third, only physicians had the necessary knowledge to understand the laws of medical geography and they were preoccupied with the weight of their medical practice and duty to society.⁴ However Becker's criticisms seem to have gone unnoticed in the literature.

Fifteen years later a second critical review of the progress of medical geography was written. In a 24-page essay another German physician, Heinrich Schweich, observed that many people had attempted to write a medical geography; a tremendous amount of data had been collected; but no one had been successful in developing a useful system. His explanation was that a majority of physicians believed that "there is just nothing to be learned from medical geography that can be applied in everyday practice".⁵ Two reasons for this attitude, in his view, were the lack of a textbook, and the fact that the field had not been defined clearly. Indeed Schweich himself was not clear about its boundaries, and his thinking veered more towards geographical nosology (a forerunner to geographical pathology) than nosological geography. Like so many critics both then and now, Schweich was strong on criticism but weak in suggesting alternative approaches.

In the 1840s and particularly the 1850s there was a surge of interest in medical geography and geographical medicine. It is in this context that we examine the critique of medical geography by August Hirsch. In 1853, as an unknown physician from Danzig, he wrote a scathing review of a new book, *Medizinische Geographie* by Caspar Friedrich Fuchs, the medical officer of health in Brotterode, Thuringia.⁶ Under the title 'Achievements in Medical Geography', Hirsch made a lengthy statement on the status of medical geography in general, and focused on Fuchs's book specifically. He began his review by noting four basic points: the study of both the geography and history of disease was still in the initial stages of development; the development of both was of importance to the development of medicine as a whole; German doctors should change their attitude to these two areas, which up to that point "they have generally appreciated so little or so incompletely"; and greater attention should be placed on medical topographies.⁷ Hirsch used Fuchs's work for the introduction to medical geography because he felt it represented the type of problems confronting the field. He started with a fundamental criticism of the book asking whether the current general and specific knowledge "is adequate for the writing of such general geography. I dare to answer both questions with a very decisive 'no'!" Hirsch concluded therefore that Fuchs's general medical geography "is

⁴ Becker, *op. cit.*, note 2 above, p. 140.

⁵ Schweich, *op. cit.*, note 3 above, pp.1–2.

⁶ August Hirsch, 'Uebersicht der Leistungen im Gebiete der medicinischen Geographie', *Jahrbücher der in- und ausländischen gesammten Medicin* [Schmidts Jahrbücher], 1853, 78: 355–75.

⁷ *Ibid.*, p. 355.

unsatisfactory in every respect”.⁸ It is hard to imagine a more devastating opening comment. Was it valid?

Fuchs had divided the world into three disease zones but, as Hirsch pointed out, even in Europe there was hardly any country that possessed accurate and reliable knowledge of its medical topographical conditions. Therefore, Hirsch believed that to attempt to portray the global status of diseases was premature and misleading. He also identified what he considered to be medical errors in Fuchs’s classification and made numerous challenges to the author’s knowledge about the geographical occurrences and distribution of several of the key diseases in Fuchs’s paradigm. In addition, he challenged his classification of epidemic diseases, labelling it as “just as unsatisfactory”.⁹

However it should be recorded that Fuchs recognized that the basis upon which he proceeded in his book was tenuous. First, he admitted that he had neither the means to acquire nor access to a good library, and second, he pointed out the incomplete state of the data. Fuchs stated: “I was denied such means, and I must ask that the reader take this into account in judging this work. Of course it is easier to build if the material is complete and abundant”.¹⁰ However Hirsch clearly rejected Fuchs’s caveat, believing the work to be fundamentally weak.

In 1856 Hirsch wrote another lengthy critique, this time of the two volume work by Adolf Mühry (1810–1888), *Die geographischen Verhältnisse der Krankheiten* (The Geographical Distribution of Diseases).¹¹ The article appeared under the title of ‘Werth und die wissenschaftliche Bedeutung der geographischen und historischen Pathologie’ (On the Value and Scientific Importance of Geographical and Historical Pathology) in the *Wiener medicinische Wochenschrift* (Vienna Medical Weekly).¹² With the benefit of historical knowledge we now know that Hirsch had a hidden agenda in this review because at that point he was working on his two volume *Handbuch der historisch-geographischen Pathologie* (Manual on Historical-Geographical Pathology).¹³ Although the title did not indicate it, in fact the article was a critical review of Mühry’s book. As in the case of Fuchs’s *Medizinische Geographie*,

⁸ Ibid., p. 356: Note: due to the nature of the writing style in this period German sentences were long. In some instances, where I thought it was warranted, I have included more of the German text than I have quoted in English so that a reader with a knowledge of the German language can follow the quotations more fully. “Es entsteht zunächst die Frage, ob unser Wissen im Allgemeinen und das vom Vf. gesammelte Material im Speciellen—so weit man nämlich aus die Lektüre seiner Schrift einen Schluss auf dasselbe machen darf—ausreicht, um eine solche allgemeine med. Geographie zu schreiben. Ich getraue mir beide Fragen mit einem ganz entschiedenem: Nein! zu beantworten.” “—wir müssen es mit Bedauern aussprechen—in keiner Beziehung befriedigen kann.”

⁹ Ibid., p. 357.

¹⁰ Caspar Friedrich Fuchs, *Medizinische Geographie*, Berlin, A Duncker, 1853, p.vi: “Mir sind solche versagt, und ich muss bei Beurtheilung dieser Schrift bitten, auf dieses Verhältniss Rücksicht zu nehmen. Mit vollständigem, reichlichem Material ist freilich leichter zu bauen.”

¹¹ Adolf Mühry, *Die geographischen Verhältnisse der Krankheiten: oder Grundzüge der Noso-Geographie*, Zweiter Theil, *Thesaurus Noso-geographicus oder geordnete Sammlung noso-geographischer Berichte, mit hinzugefügten Commentationen*, Leipzig and Heidelberg, C F Winter, 1856.

¹² August Hirsch, ‘Werth und die wissenschaftliche Bedeutung der geographischen und historischen Pathologie’, *Wiener medicinische Wochenschrift*, 1856, 60: 302–4, 320–2, 335–8, 352–4 and 368–70.

¹³ August Hirsch, *Handbuch der historisch-geographischen Pathologie*, 2 vols, Erlangen, F Enke, 1859–1864.

it was a detailed and critical assessment pointing out major flaws in Mühry's conceptualizations and data.

Hirsch began with a useful appraisal of the current status of research in the discipline:

Among the achievements enjoyed by medicine in the last three decades, which have been so favourable for its development, we may undoubtedly include the progress made in looking at diseases historically and geographically, and although up to now we have by no means succeeded in researching the subject to the extent that once a comprehensive study of it has been completed, we can give it the place it deserves beside the other branches of our science, we are convinced that in view of the enthusiasm with which more and more research is being devoted to these previously so completely neglected fields of medicine that the knowledge acquired in this way will lead to general results, that the scattered, abundant material will be ordered systematically in accordance with internal laws and will finally provide us with a complete theory of historical and geographical pathology and nosology.¹⁴

There are several points to note in this opening sentence. Hirsch loved to write in those traditionally long German sentences which are the bane of many a translator! More importantly, unlike Becker and Schweich, he saw signs for optimism while this kind of research was a legitimate part of medicine, and although the field had been neglected it was becoming more popular; further, it would be possible to discover laws which would lead to the development of an all-encompassing theory of historical and geographical pathology. Hirsch used the review as a platform to promote his own concepts, emphasizing historical aspects which were not part of Mühry's study. For Hirsch, the historical and geographical aspects of disease were intertwined so that one could not be studied without the other. Nor is it without significance that the words in the title of Hirsch's review changed from "Geographical and Historical Pathology" to "historical and geographical pathology" in the first sentence. This was not just a question of the interchangeability of a title or the ignoring of the precedence of "g" before "h" in the German alphabet. Hirsch wrote what he meant. To him history was often more important than geography. Therefore, on this ground alone, he would have been critical of anyone focusing only on the geographical aspects. Second, in contrast to his review of Fuchs's book, instead of "medical geography", he used the term "geographical pathology", i.e., conceptually a sub-field of geographical medicine. Did this mean that he made no distinction between medical geography and geographical pathology, or that he dismissed medical geography as not being the correct approach for physicians? He gave a partial answer to such questions stating:

¹⁴ Hirsch, op. cit., note 12 above, pp. 302–3: "Zu den Errungenschaften, deren sich die Heilkunde im Laufe der drei letzten, ihrer Entwicklung so günstigen Decennien zu erfreuen gehabt hat, dürfen wir ohne Zweifel auch den Fortschritt zählen, der in der historischen und geographischen Anschauungsweise auf dem Gebiete der Krankheiten gemacht worden ist, und wenn es bis jetzt auch keineswegs gelungen ist, jene Forschungen so weit zu führen, dass wir dem Gegenstande selbst den ihm nach einer allseitigen Bearbeitung gebührenden Platz neben den übrigen Zweigen unserer Wissenschaft anzuweisen vermöchten, so halten wir uns bei dem Eifer, mit welchem sich die Forschung immer mehr und mehr jenen bisher so ganz vernachlässigten Gebieten der Medizin zuwendet, doch davon überzeugt, dass die auf diesen Wegen gewonnene Erkenntniss zu allgemeineren Resultaten führen, dass das locker gehäufte, gewaltige Material nach inneren Gesetzen systematisch geordnet werden, und uns schliesslich eine in sich abgeschlossene Lehre von der historischen und geographischen Pathologie und Nosologie erwachsen wird."

... we are of the opinion, based on our experience, based on the viewpoint we have reached from our knowledge of the subject, that we are not as close to achieving the goal as many would like to believe and although we had the opportunity to make this claim three years ago in reporting on the *Versuch einer allgem. [einen] mediz. [inischen] Geographie* [Attempt at a General Medical Geography] by Fuchs¹⁵ in *Schmidts Jahrb. [uch]* [Schmidt's Yearbook], Volume 78, page 356, we are convinced that it has not been refuted by more recent works of this nature. It is precisely because the medical public is now showing more interest than before in the subject in question, and specifically in geographical pathology, that we consider it our very special duty to remove in advance any illusions which could be held regarding, for example, the advanced state of our knowledge regarding geographical pathology by stating that a science worthy of being called geographical pathology and nosology is still non-existent, rather, that all previous efforts, including the most recent, imposingly self-sufficient work by Mr. Mühry, are to be regarded as more or less successful complete studies of individual parts or individual aspects of the whole and that the value of the results abstracted in them is to be assessed all the more carefully because otherwise one runs the risk of constructing an illusion instead of a science and of discrediting this youthful discipline, which, moreover, is being observed with distrust by so many groups.

We have set ourselves the goal of showing those sections to the medical public who have paid no attention to the subject up to now, or who have contested its practical value, what, in our opinion, the subject matter of historical and geographical pathology and nosology is, what value and scientific importance these doctrines, which, incidentally, cannot be separated, have for medicine as a whole, and the research that has to be done on them in order to obtain just these results. We think that we will be able to achieve this goal in a very practical way by presenting a critical discussion of one work in the field of geographical nosology which is entitled: *Die geographischen Verhältnisse der Krankheiten* ... by A Mühry ...¹⁶

¹⁵ Here Hirsch confused the title of Finke's three volume study of 1792–95 with Fuch's *Medizinische Geographie*. It is interesting that a formidable and severe critic such as Hirsch should, at least momentarily, mix up two works written sixty years apart.

¹⁶ Hirsch, op. cit., note 12 above, p. 303: "Wie lange es noch dauern kann, bis sich solche Hoffnungen realisiren, ist schwer zu sagen; jedenfalls glauben wir nach den von uns gemachten Erfahrungen, nach der Ansicht, die wir vom Standpunkte unsere dahin zielenden Erkenntnisse erlangt haben, dass wir dem Ziele nicht so nahe sind, als mancher glauben mag, und wenn wir diese Behauptung schon vor drei Jahren bei Berichterstattung über den Versuch einer allgem. mediz. Geographie von Fuchs in Schmidt's Jahrb. Bd. 78 pag. 356 auszusprechen Gelegenheit hatten, so ist dieselbe unserer Ueberzeugung nach auch durch neuere Arbeiten der Art nicht widerlegt worden. Gerade weil die Aufmerksamkeit des ärztlichen Publikums sich jetzt mehr als bisher dem in Frage stehenden Gegenstande, und speziell der geographischen Pathologie, zugewendet hat, halten wir es als ganz besonders für unsere Pflicht, jede Illusion, die man sich etwa über den vorgeschrittenen Standpunkte unseres Wissens in dieser Beziehung machen könnte, vorweg durch die Erklärung zu beseitigen, dass die Wissenschaft, welche eigentlich den Namen einer geographischen Pathologie und Nosologie verdient, noch gar nicht existirt, dass alle bisherigen Leistungen vielmehr, auch die neueste, mit imponirender Selbstgenügsamkeit auftretende des Herrn Mühry, nur als mehr oder weniger gelungene und vollständige Bearbeitungen einzelner Theile oder einzelner Seiten des Ganzen anzusehen sind, und dass der Werth der in denselben abstrahirten Resultate um so vorsichtiger zu bemessen ist, als man sonst leicht Gefahr läuft, statt einer Wissenschaft ein Nebebild zu konstruiren, und die jugendliche Disziplin, deren Realität zudem noch von so vielen Seiten mit misstrauischen Blicken betrachtet wird, zu diskreditiren.

"Wir haben es uns zur Aufgabe gemacht, demjenigen Theile des ärztlichen Publikums, der dem Gegenstande bisher keine Aufmerksamkeit geschenkt oder den praktischen Werth desselben in Abrede gestellt hat zu zeigen, was unserer Ansicht nach der Inhalt der historischen und geographischen Pathologie und Nosologie ausmacht, welchen Werth und welche wissenschaftliche Bedeutung diese Doktrinen, die übrigens gar nicht zu trennen sind, für die gesammte Heilkunde haben, und welche Bearbeitung derselben nothwendig ist, damit eben jene Resultate erzielt werden. Wir glaubendiese Aufgabe auf recht praktischem Wege lösen zu können, wenn wir die kritische Besprechung einer in das Gebiet der geographischen

Hirsch's claim that "historical and geographical pathology" cannot be separated is an extreme position. While it is true from a Kantian perspective that geography and history are complementary, conceptually they are not inseparable. It follows that both geographical pathology and historical pathology are separate sub-disciplines, so Hirsch was challenging the independence of medical geography and geographical medicine and all of their sub-fields. Mühry used the term "medical geography" and correctly saw the difference between it and geographical medicine and its sub-fields: geographical pathology and geographical nosology. Therefore Hirsch's statement is not to be taken at face value. It seems he was so focused on his own approach that he disregarded the distinction and was unwilling to recognize alternative perspectives. Presumably this was because to him understanding could be derived only from an integrated analysis.

After having established his perspective, he proceeded in the review to describe the essence of Mühry's study. He then turned to his critique and noted that:

If the reader takes a cursory glance at the system of disease distribution throughout the world developed by the author which, in order to do the author complete justice, we have reproduced here as comprehensively as possible even in its most important¹⁷ details, he has indeed to be astounded by the uniformity and system which the author states he hardly expected to find himself and which surprised him as well . . .

On the same page Hirsch declares:

However, our opinion of this system will be quite different, when we analyse the facts, if we first convince ourselves that the material on which this system is based is only partially useful, that precisely the most important preliminary questions, which must be answered or the development of such a system is absolutely inconceivable, are still unanswered and, finally, that a theory of geographical pathology cannot be drafted without at the same time taking into account the history of diseases and to a far greater extent than appears necessary to the author himself.¹⁸

Hirsch was sceptical about the extent to which Mühry's new system corresponded with the data and specifically about the degree to which the external environment

Nosologie gehörigen Schrift vorlegen, deren Titel lautet:

"Die geographischen Verhältnisse der Krankheiten, oder Grundzüge der Noso-Geographie. Von A. Mühry MDr., 2 Theile, Mit einer Karte. Leipzig und Heidelberg. 1856. 8. Th. 1. XIV und 224, Th. 2. X und 284 Seiten."

¹⁷ I assume that Hirsch meant to write "most *unimportant* details".

¹⁸ Ibid., p. 337: "Wirst man einen flüchtigen Blick auf das vom Vf. konstruirte Gebäude der Krankheitsvertheilung über die Erdoberfläche, das wir hier, um dem Autor vollkommen gerecht zu werden, selbst bis in die wichtigsten Details so ausführlich als möglich wiedergegeben haben, so muss man in der That über eine Regelmässigkeit und Systematik erstaunen, die Vf. als eine kaum geahnte und ihn selbst überraschende bezeichnet, und die ihn so wohl begründet erscheint, dass er, die Worte von St. Pierre parodirend, an die Spitze seiner Untersuchungen das Motto setzt: Les maladies ne sont pas jetées au hazard sur la terre. Allein ganz anders wird sich unsere Ansicht von diesem System gestalten, wenn wir an eine Analyse der Thatfachen gehen, wenn wir uns zunächst davon überzeugen, dass das Material, aus welchem jenes Gebäude gefertigt, ein nur theilweise brauchbares ist, dass gerade die bedeutendsten Vorfragen, vor deren Erledigung an die Entwicklung eines solchen Systems gar nicht zu denken ist, noch unbeantwortet dastehen, dass schliesslich der Entwurf einer Lehre von der geographischen Pathologie ohne gleichzeitige Berücksichtigung der Geschichte der Krankheiten, und zwar in einem weit grösseren Umfange, als dem Vf. selbst nothwendig erscheint, eine nicht zu lösende Aufgabe ist."

could account for patterns of distribution. As a physician with a strong interest in pathology he believed that the nature of disease itself and the internal environment of a human being had to have a stronger influence than Mühry's system gave them. In this respect he observed that:

It is precisely in the case of the diseases most important for this study, the zymotic diseases, that we are least capable of emphasizing in every instance characteristics in a symptomatological or anatomical regard and if Mr. Mühry (p. 65) believes that "the old, vague, confused theory of fevers dissolves automatically, practically speaking like a nebula into stars" due to his disease classification, he is deceiving himself, which is worse than an awareness of a lack of knowledge.¹⁹

Clearly this was a strong criticism because Hirsch was claiming that Mühry had committed a double error. He had neither the correct nor the complete information required but, more seriously, he did not acknowledge that he did not have this vital information. He pointed out that Mühry devoted special attention to typhoid fever as one of the key indicators for his geographical zones, but in fact at that time physicians did not know what typhoid fever was nor were they able even to define its elementary characteristics.

Hirsch indicated that one of the most valuable tasks for medical geographers and historians was to investigate whether the symptoms attributed to a disease occurred in the same forms "at all times and in all places", and what effect the external environment had on the disease form.²⁰ He pointed out that a careful reading of the text showed Mühry was familiar with only the European form of typhoid. Finally he levelled a damning criticism at the proposed geographical system saying that:

... because he excludes all other forms of fever which do not fit these two diseases perfectly [i.e. abdominal and petechial typhoid],²¹ he develops from the facts selected in this way a law stating: typhoid does not exist in the tropics. In opposition to the acceptance of this law, which the author describes as the main result of his studies, we must first note that only the above-criticized lack of any pathological research could cause the author²² to describe each of the typhus fevers described by the observers in the tropics as a disease specifically different from typhoid ...²³

¹⁹ Ibid., p. 338: "... gerade bei den für die vorliegende Untersuchung wichtigsten Krankheiten, den zymotischen, sind wir am wenigsten im Stande, stets spezifische Eigenthümlichkeiten, in symptomatologischer oder anatomischer Beziehung, hervorzuheben, und wenn Herr Mühry (p. 65) glaubt dass durch die von ihm gewälte Klassifikation der Krankheiten sich, die alte, in der That unklare und verworrene Fieberlehre, von selbst, gleichsam wie ein Nebelfleck in Sterne aufklärte, so befindet er sich in einer Selbsttäuschung, die schlimmer ist als das Bewusstsein einer mangelhaften Erkenntniss."

²⁰ Ibid., p. 352.

²¹ At this period the difference between typhoid fever and typhus was not understood. This presents problems in translating the word into English because in German and other European languages the word typhus was used for both typhoid and typhus.

²² From Mühry's text it is difficult to decide whether Hirsch is correct. Mühry may have been recognizing some of the differences between typhus and typhoid fever.

²³ Ibid., p. 352: "Herr M. sagt zwar nicht, was er denn eigentlich unter Typhus versteht, allein eine wiederholte, genaue Durchsicht des Buches lehrt, dass er nur unsern europäischen Abdominal- und Petechial-Typhus kennt und indem er alle übrigen Fieberformen, die nicht ganz auf eine dieser beiden Krankheiten passen ausschliesst, entwickelt er aus den auf diese Weise herausgelesenen Thatsachen ein Gesetz, welches lautet: der Typhus fehlt auf der Tropenzone. Wir müssen gegen die Zulässigkeit dieses Gesetzes, welches Verf. als Hauptergebniss seiner Studien bezeichnen zunächst bemerken, dass nur der oben gerügte Mangel jeder pathologischen Forschung den Vf. dazu veranlassen

However, over the next several pages Hirsch gave example after example of physicians living in the tropics or with tropical experience who had cited cases of typhoid in the tropics and said, “Finally, how Mr. Mühry can dispute the occurrence of typhoid in Brazil and Peru is inconceivable to me, assuming that he has read Sigaud and Tschudi in the original . . .”²⁴ Hirsch concluded that if contradictory evidence surfaced which did not support Mühry’s theory, then Mühry discarded it. This of course is probably the most serious criticism with which an author can be charged. Further challenging Mühry’s scholarship, Hirsch remarked: “Instead of Mr. M. now admitting, after reading such reports, that his law is untenable, Mühry states, ‘From our general viewpoint we can declare quite decisively that the occurrence of typhoid in this case is completely impossible.’”²⁵ Hirsch concluded that, “no reader except for Mr. M. will believe in the truth of the law he has developed” and that Mühry’s book, like Fuchs’s, teaches “how a geographical pathology should not be written”.²⁶

In 1857 Hirsch wrote another shorter and less strident review of Mühry’s book in the ongoing series titled ‘Uebersicht über die Leistungen im Gebiete der medicin[ischen] Geographie während der letzten Jahre’ (Survey of the Achievements in the Field of Medical Geography during the Last Few Years) published in *Jahrbücher der in- und ausländischen gesammten Medicin* (Yearbooks of Domestic and Foreign Medicine as a Whole). This article basically repeated the main points made in the 1856 review.²⁷

Finally, it should be noted that not all reviewers agreed with Hirsch’s judgement. Some commented favourably on Mühry’s study.²⁸

konnte, jedes von den Beobachtern aus den Tropen beschriebene typhöse Fieber als ein vom Typhus spezifisch verschiedenes . . .”.

²⁴ Ibid., p. 353: “Wie Herr Mühry endlich das Vorkommen des Typhus Brasilien und Peru in Abrede stellen kann, ist mir unbegreiflich, voraussetzt, dass er die Schriften von Sigaud und Tschudi in Original gelesen hat . . .”. See J J von Tschudi, ‘Ueber die geographische Verbreitung der Krankheiten in Peru: Ein Beitrag zur medicinischen Geographie’, *Oesterreichische medicinische Wochenschrift*, 1846, no. 12: 378–80; no. 13: 407–14; no. 14: 437–46; no. 15: 467–76; no. 16: 507–10; no. 17: 505–8; no. 18: 533–9; no. 19: 563–74; no. 20: 595–604; no. 21: 629–36; no. 22: 659–68; no. 23: 693–700; no. 24: 726–32. Like Hirsch, Tschudi had severely criticized Fuchs’s *Medizinischen Geographie*, see J J von Tschudi, ‘Beiträge zur medicinischen Geographie, mit besonderer Berücksichtigung der “medizinischen Geographie von Dr. Kaspar Friedr. Fuchs”’, *Wiener medizinische Wochenschrift*, 1855, 5: 8–10; 23–25; 39–40; 55–7; 71–2; 86–8; 103–5; 117–19.

²⁵ Ibid., p. 353: “Statt das nun Herr M. nach Durchlesung solchen Berichtes die Unhaltbarkeit seines Gesetzes zugestehet, erklärt er (Bd. 2, p. 35): ‘Wir können von unserem gewonnenen allgemeinen Standpunkte aus ganz entschieden den Typhus hier für ganz unmöglich erklären.’ . . . dass ausser Herr M. kaum ein Leser an der Wahrheit jenes von ihm entwickelten Gesetzes glauben wird.”

²⁶ Ibid., 369–70: “Wer verlassen hiemit Herrn Mühry und sein Buch, von dem wir nur dasselbe sagen können, was wir vor einigen Jahren über eine ähnliche Schrift von Fuchs sagten: es lehrt uns, wie die geographische Pathologie nicht bearbeitet werden muss.”

²⁷ August Hirsch, ‘Uebersicht über die Leistungen im Gebiete der medicin[ischen] Geographie während der letzten Jahre’, *Jahrbücher der in- und ausländischen gesammten Medicin*, 1857, 95: 237–64; 96: 81–118.

²⁸ *British and Foreign Medical Chirurgical Review*, April 1857, 19: 312–22, contains a review of Mühry’s *Die Geographischen Verhältnisse der Krankheiten* (note 11 above), and of Johnston’s 1856 map, ‘On the Geographical Distribution of Health and Disease’.

Hirsch as Contributor

If Hirsch believed that both Fuchs's and Mühry's efforts at writing a medical geography were fundamentally flawed, what solution did he offer? His two volume *Handbuch der historisch-geographischen Pathologie* (Manual of Historical-Geographical Pathology), 1859–1864, was his answer.²⁹ In this work he revealed himself to be a contributor both conceptually and substantively. Hirsch had been interested in the field since 1846, shortly after graduating in medicine, and had devoted “himself with ardour to geographico-pathological study, with a view to qualifying for the career he had most at heart—that of medical officer in British India”.³⁰ Although this dream was never realized, it established a link between him and Britain, and it may explain why he dedicated his *Handbuch* to the London Epidemiological Society.

Hirsch realized, like Finke and Schnurrer before him, that in order to build a firm foundation for his study he must resolve inherent conceptual problems.³¹ He began by acknowledging the origin and antiquity of medical geography:

The concept of medical geography as a science is as old as that of medical science itself and even if Hippocrates' book *On Airs, Waters, and Places*, which is often quoted in this connection, had not been passed down to us, solely the fact that the ancient Greeks and Romans sent those suffering from tuberculosis to Egypt as a cure would prove to us that these ancient doctors had attained at least the same level of medical-geographical knowledge as many an eager student of medicine today. However, for more than two thousand years this work by the famous doctor from Cos has remained the only attempt at a philosophical treatment of medical geographical facts and although an abundance of information has been obtained for medical research through the opening up and exploration of foreign countries, although the treatment of medicine from a geographical point of view has become not only possible but even necessary due to improvements in communications and increasing traffic between peoples, although, finally, the material recorded in individual reports is increasing enormously and outstanding authors have paved the path of research with advice and action, it is only very recently that scientific treatment of the subject has been begun and an attempt has been made to lay the basis for a science previously existing in name only.³²

²⁹ In the literature there is some confusion over the publication date of this work, as both 1859 and 1860 are given. The publishing history is that volume one appeared initially in two parts. Part one of volume one was published in 1859, and part two in 1860. As a result, part one of volume one was reviewed in some journals in the same year that it appeared, 1859, while the complete volume could not be reviewed until 1860. Volume two was published in 1864.

³⁰ *Lancet*, 1894, i: 445.

³¹ See, for example, A Barkhuus, 'Medical Geographies', *CIBA Symposia*, 6, 1945: 1997–2016; F A Barrett, 'A Medical Geographical Anniversary', *Social Science and Medicine*, 1993, 37: 701–10; N Rupke, 'Humboldtian Medicine', *Medical History*, 1996, 40: 293–310.

³² Hirsch, op. cit., note 13 above, vol. 1, pp. 1–2: “Der Begriff der medicinischen Geographie als Wissenschaft ist so alt, wie die medicinische Wissenschaft selbst, und wenn auch das in dieser Beziehung vielfach citirte Buch des Hippocrates ‘von der Luft, den Wassern und den Gegenden’, nicht auf uns gekommen wäre, so würde schon der Umstand, dass die alten Griechen und Römer ihre Schwindsüchtigen der Heilung wegen nach Egypten schickten, uns dem Beweis liefern, dass diese alten Aerzte wenigstens auf demselben Standpunkte medicinisch-geographischer Kenntniss standen, zu dem sich noch heute mancher der Heilkunde Beflissener bekennen muss. Jene Schrift des berühmten Arztes von Cos ist aber für mehr als volle zwei Jahrtausende der einzige Versuch einer philosophischen Bearbeitung medicinisch-geographischer Thatsachen geblieben, und wenn mit der Aufschliessung und Durchforschung fremder Länder auch eine Fülle von Thatsachen für die heilkundige Forschung gewonnen, wenn mit der Vervollkommnung der Kommunikationsmittel und dem zunehmenden Völkerverkehre nicht bloss die Gelegenheit, sondern selbst die Nothwendigkeit einer vom geographischen Standpunkte ausgehenden

This quotation makes several points that require comment. First, like most of the other writers in this field, Hirsch cited *On Airs, Waters, and Places* as the seminal work of the discipline. Indeed, Hirsch accepted Hippocrates' treatise as medical geography, which would seem to indicate that he saw no difficulty in a physician writing a geography. However, unlike others and at the same time demonstrating his sense of history, Hirsch made two additional points. He recognized that to attribute the notion of medical geography to this period was to indicate that it dated from nearly the beginnings of scientific medicine itself. Second, he claimed that the idea of medical geography was not unique to Hippocrates, that the fact that doctors in antiquity, by sending patients to places they believed were healthier, demonstrated that the inherent concept had been recognized by others. However, from the beginnings of neo-Hippocratism in the sixteenth century, most writers thought of Hippocrates' work as being the only source of the concept of medical geography.

Characteristically, those who, after Hippocrates, were to write about medical geography and geographical medicine, claimed that no one else had written such a work since *On Airs, Waters and Places*. Given Hirsch's broad historical perspective, it is strange that he should also claim that for more than 2000 years the Hippocratic work, "remained the only attempt at a philosophical treatment of geographical facts".³³ In Hirsch's case, he added the conditional statement of a "philosophical" treatment. In the first place, Hippocrates' treatise was not a philosophical statement. Second, with his knowledge of the literature, Hirsch knew that others had made what amounted to philosophical statements. The case of Finke comes to mind as the best example of this.

Irrespective of this debate, Hirsch made a clear statement about the difference between a medical geographical approach and a geographical medical approach:

Medical geography offers scientific research and presentation two starting points depending on whether 1. one presents the individual points of the surface of the earth in accordance with all their characteristics, climatic, terrestrial, social and other conditions and shows which peculiar features become apparent in the—physiological and pathological—life of that part of mankind moving within these conditions from a geographical point of view, or 2. one chooses precisely these peculiar features as the basis of the study and shows how they take different forms at individual points on the surface of the earth and the extent to which they are to be regarded as the results of the effect of local conditions from an anthropological point of view.—The first kind of a study would result in a specific medical geography, the second method a geographical anthropology or a geographical pathology, depending on whether the study examines the physiological or pathological aspect of life.³⁴

Bearbeitung der Heilkunde nahe gerückt war, wenn sich endlich das ihr einzelnen Berichten niedergelegte Material in enormer Weise anhäufte und hervorragende Autoritäten mit Rath und That den Weg der Forschung anbahnten, so haben sich doch erst in der neuesten Zeit Kräfte gefunden, welche an die wissenschaftliche Bearbeitung des Gegenstandes gegangen sind und die Basis zu einer bis dahin nur dem Namen nach existirenden Wissenschaft zu legen versucht haben."

³³ Ibid., p. 1: "Jene Schrift des berühmten Arztes von Cos ist aber für mehr als volle zwei Jahrtausende der einzige Versuch einer philosophischen Bearbeitung medicinisch-geographischer Thatsachen geblieben ..."

³⁴ Ibid., p. 2: "Die medicinische Geographie bietet der wissenschaftlichen Forschung und Darstellung zwei Angriffspunkte, je nach dem man entweder vom geographischen Standpunkte ausgehend, eine Darstellung der einzelnen Punkte der Erdoberfläche nach allen sie charakterisirenden, klimatischen, terrestrischen, socialen und anderen Verhältnissen gibt und zeigt, welche Eigenthümlichkeiten sich in

Hirsch understood, therefore, that if the information were primarily organized on a geographical basis then the study was medical geography and if the focus were on disease it was geographical medicine. In his case his stated focus was on a sub-discipline of medicine: pathology. So that there would be no confusion as to what he specifically meant, Hirsch continued:

The task of geographical pathology, as defined above, is to show how individual disease forms are generally distributed over the surface of the earth, insofar as we know it,—the differences that can be demonstrated in the form of individual diseases at various points on the surface of the earth, the geographically dependent factors (such as race, nationality, soil conditions, climate, social factors, etc.) that have to be considered essential for the occurrence and distribution of individual diseases, insofar as conclusions can be drawn regarding the promotion of the inhibiting effect of particular factors on the origins of disease from the constant or very frequent occurrence of a specific disease form where one or several of these factors are present or lacking as well as, vice versa, from the constant lack of a specific disease where the external conditions are always the same,—how individual disease forms interact spatially, excluding one another or exhibiting a more or less constant spatial coincidence,—finally, whether there have been changes in the geographical distribution of diseases over time, what they are and their relationship to changes in the environment of man's living conditions.—This is a general outline of the task of geographical pathology—a task whose great importance for specific pathology, for etiology and for public and private health can hardly be disputed.³⁵

Hirsch's repeated reference to individual disease forms was the key to the geographical-pathological approach because although the geographical factors are important they are ancillary aspects when compared to the disease form which is the core of the study.

dem—physiologischen und pathologischen—Leben des innerhalb derselben sich bewegenden Theiles der Menschheit bemerklich machen oder vom anthropologischen Standpunkte aus eben diese Eigenthümlichkeiten zur Basis der Untersuchung wählt, nachweist, wie sich dieselben an den einzelnen Punkten der Erdoberfläche verschieden gestalten, und in wie weit sie als die Resultate des Einflusses der durch die Oertlichkeit gebotenen Verhältnisse anzusehen sind.—Die erste Art der Untersuchung würde zur Darstellung einer speciellen medicinischen Geographie führen, die zweite Methode ergäbe, je nachdem sich die Untersuchung der physiologischen oder pathologischen Seite des Lebens zuwendet, eine geographische Anthropologie oder eine geographische Pathologie.”

³⁵ Ibid., p. 2: “Die geographische Pathologie, in diesem Sinne aufgefasst, hat die Aufgabe; zu zeigen, in welcher Weise die einzelnen Krankheitsformen auf der Erdoberfläche, so weit uns dieselbe in dieser Beziehung bekannt geworden, überhaupt verbreitet sind,—welche Unterschiede sich in der Gestaltung der einzelnen Krankheiten an den verschiedenen Punkten der Erde nachweisen lassen,—welche von geographischen Verhältnissen abhängige Momente (wie Race, Nationalität, Bodenverhältnisse, Klima, sociale Einflüsse u. s. w.) als wesentlich für das Vorkommen und die Verbreitung der einzelnen Krankheiten angesehen werden müssen, insofern aus dem konstanten, oder überwiegend häufigem Vorkommen einer bestimmten Krankheitsform unter dem Vorherrschen oder der Abwesenheit eines oder mehrerer jener Momente, so wie umgekehrt aus der steten Abwesenheit einer bestimmten Krankheit unter sich immer gleich gestaltenden äusseren Verhältnisse Schlüsse über den fördernden, oder hemmenden Einfluss dieser Momente auf die Krankheitsgenese gezogen werden können,—wie sich einzelne Krankheitsformen in dem räumlichen Auftreten zu einander verhalten, indem sie sich gegenseitig ausschliessen oder eine mehr oder weniger konstante Coincidenz des Vorkommens im Raume zeigen—endlich ob und welche Veränderungen in der geographischen Verbreitung der Krankheiten im Laufe der Zeit eingetreten sind, und in welchem Zusammenhange dieselben mit Veränderungen in der Aussenwelt oder in den Lebensverhältnissen der Menschen zu stehen scheinen.—Dies ist in allgemeinen Umrissen die Aufgabe, welche die geographische Pathologie zu lösen hat—, eine Aufgabe, deren grosse Bedeutung für die specielle Krankheitslehre, für Aetiologie und für öffentliche und Private Hygiene nicht wohl in Frage gestellt werden kann.”

From the above it is obvious that although the approaches are separate they are closely related and complementary. Hirsch not only had a clear idea of what was wrong with the attempts to write a medical geography but also of what conditions must be fulfilled to succeed. These included showing the previous achievements, identifying the gaps in knowledge, and following rigorous scientific methods. He indicated that these had been the approaches he had pursued in developing his geographical pathology studies.³⁶

Hirsch concluded the introduction by briefly identifying the method he used. His first point was that the work be made as complete as possible. Second, he identified the references consulted so that a reader might pursue topics of particular interest. Third, he acknowledged he had included all disease forms which indicated any medical geographical characteristic. Finally, he confessed that he had not made great use of statistics and recognized that others would criticize him for not doing so. In principle he was not against the use of statistics but believed many writers were using them inappropriately. The available statistical data were not even remotely adequate, so that many researchers made outlandish claims based on assumptions from incomplete and inaccurate material. Hirsch suggested that the detail of some conclusions was irresponsible, given that facts at the simplest level, i.e. the frequency of occurrence of the global distribution of any given disease, were still unknown. He went on to comment that truly useful reports were only obtainable from hospitals and that these did not necessarily reflect the scale of disease conditions in the places in which diseases occurred.

His greatest concern was whether it was premature to attempt to write this type of work and, in fact, this was one of the basic criticisms he had hurled at both Fuchs and Mühry. The problem, as Hirsch saw it, was that there was a huge mass of information both classified and unclassified, but that previous attempts to organize it into some type of system had produced meagre results. However, he conceded that the amount of material would not be getting smaller since it was becoming available at an ever-increasing rate. As a result, he thought that in the future it would be even more difficult to comprehend and organize than it was at present. Also, due to progress in the field, this was an appropriate moment to take a retrospective look. In his opinion, there was no branch of medicine with a greater and more urgent need for a thorough examination than historical-geographical pathology.³⁷ However, there was another factor which was a real catalyst in encouraging him to proceed with the publication of his work at that time. In 1858 Rudolf Virchow had edited his *Handbuch der speciellen Pathologie und Therapie* (Manual of Specific Pathology and Therapy).³⁸ His previous work was leading medical research in a new and successful direction and Virchow's opinion mattered internationally. Virchow saw Hirsch's work in geographical pathology as an important adjunct to his own and told Hirsch that he would like it to appear with the following designation, "published as a supplement to the specific pathology edited by Professor

³⁶ Ibid., p. 3.

³⁷ Ibid., p. v–viii.

³⁸ Rudolf Virchow (ed.), *Handbuch der speciellen Pathologie und Therapie*, Erlangen, F Enke, 1854–65.

Virchow”.³⁹ This stamp of approval by someone with immense prestige was particularly important to Hirsch at a time when some strongly disagreed on the value and usefulness of his research.

Substantively, Hirsch focused on five themes in his analysis of geographical pathology. First he described the geographical distribution as completely as he could. Second, “where it seemed necessary”, he surveyed briefly, “the most important factors from an historical point of view”.⁴⁰ Third, he examined, “specifically individual factors, like race, climate, soil etc., which appear to have a demonstrable effect on the occurrence or the distribution of the relevant disease”.⁴¹ From this it seems that the first section, the so-called geographical one, was only a description of the distribution of a disease and not a geographical analysis since under special factors he included the influence of climate and soil as being something separate from the geographical analysis of the disease distributions. Certainly, by this time geographers such as Humboldt and Ritter had established a more integrative and holistic approach to geographical analysis. The simple citing of location was not considered very sophisticated. A fourth method was to examine differences of what appeared to be the same disease discovered in different locations. He had stated in his earlier reviews that this was an important task and of course it was of central importance to geographical pathology. His final method was an elaboration on an idea which Boudin had developed in his 1843 essay on medical geography.⁴² This idea centred on the observation that some diseases had coincidences with and others antagonisms to one another. The point was that these “attractions and repulsions” might help to explain the pattern of distribution of certain groups of diseases and emphasize the spatial relationships of individual diseases to one another. In turn such patterns might reveal laws of distribution.

Hirsch divided his study into three main pathological categories: acute infectious diseases; chronic constitutional diseases; and diseases of the organs. Not only was the basic classification pathological, but within this organization the subsequent divisions consisted of thirty chapters each devoted to a specific disease. Hirsch’s classification clearly placed the work in the category of geographical medicine, not medical geography. Therefore, it is not surprising that Virchow considered it supplemented his work on specific pathology. However, within each of these chapters organized by disease Hirsch followed the five-theme approach which had a strong geographical bias. Finally, it should be noted that unlike many other studies examined, he did in the text exactly what he had stated he was going to do in the introduction.⁴³ All in all, Hirsch’s first edition was a great success.

Twenty years later Hirsch produced a substantially revised second edition which

³⁹ Hirsch, *op. cit.*, note 13 above, vol. 1, p. viii.

⁴⁰ *Ibid.*, p. 4.

⁴¹ *Ibid.*, p. 4.

⁴² Jean Christian Marc Boudin, *Essai de Géographie Médicale*, Paris, Germer-Baillière, 1843.

⁴³ I make this statement in the context of a book I have recently published: Frank A Barrett, *Disease and Geography: The History of an Idea*, Toronto, Becker Associations, 2000 (www.atkinson.yorku.ca/~fbarrett). It covers the origins and development of medical geography and geographical medicine from the mid-fifth century BC up to the mid-twentieth century AD. Historically, there are numerous examples where the author states goals in the introduction that are not addressed in the text.

was expanded to three volumes (1881–1886). It was this edition that The New Sydenham Society of London decided to translate (1883–1886). Charles Creighton M.D. undertook the task and in the “Notes of the Translator”, he stated that Hirsch had examined the proofs to verify that the English version followed the meaning of the original text.⁴⁴ It was the Creighton translation which permitted English-speaking readers to become familiar with Hirsch’s great work and it is the one used in my analysis of the second edition. The first edition was never translated into English.

In the intervening period between the two editions Hirsch noted that there had been a tremendous increase in information about geographical and historical pathology and that important advances had been made so that the second edition was much more than just a revision of the first. New topics were added, old sections were deleted, and the additions required that the work be expanded from two to three volumes. The titles of these were: (1) *Acute Infectious Diseases*, (2) *Chronic Infective, Toxic, Parasitic, Septic, and Constitutional Diseases*, and (3) *Diseases of Organs and Parts*. There is no overall conclusion at the end of volume three. In total there are 58 chapters in the three volumes and the combined work is 2171 pages in the English translation.

In the introduction to the second edition Hirsch refined his concept of geographical and historical pathology as:

... firstly, a picture of the occurrence, the distribution, and the types of the diseases of mankind, in distinct epochs of time, and at various points of the earth’s surface; and, secondly, [it] will render an account of the relations of those diseases to the external conditions surrounding the individual and determining his manner of life. And this science I have named, from the dominating point of view, the science of *geographical and historical pathology*.⁴⁵ [Emphasis in the original.]

Concluding the introduction he stated,

The full aim and object of such inquiry is to exhibit the particular circumstances under which diseases have occurred within the several periods of time and at various parts of the globe; to show whether they have been subject to any differences, and of what kind, according to the time and the place; what causal relations exist between the factors of disease acting at particular times and in particular places, on the one hand, and the character of the diseases that have actually occurred on the other; and finally to show how those diseases are related to one another in their prevalence through time and through space ...⁴⁶

His primary goal in founding this discipline was the creation of a system which would permit geographical and historical pathology to take its rightful place in the medical sciences. He suggested that the failure to take a scientific approach in all but a few of the earlier works in medical geography was a serious deficiency but that recently great progress had been made in estimating health conditions in even the remotest parts of the earth.

The question arises: is the work clearly more pathological than geographical and

⁴⁴ August Hirsch, *Handbook of geographical and historical pathology*, 3 vols, London, New Sydenham Society, 1883–86, vol. 1, p. xii.

⁴⁵ *Ibid.*, p. 1–2.

⁴⁶ *Ibid.*, p. 5.

historical? From an examination of the text it is evident that the book was not as much a pathology as one might expect. It is the geography and the history of the diseases and not their pathology which predominate. Notably, the divisions of the work, i.e., volumes, sub-sections, and chapters, used medical terms and thus organizationally the book was medical, but an examination of the contents reveals the opposite. In fact, a strong case can be made for its being more of a medical geography than a geographical pathology, because although the organization was medical, the majority of the sub-headings for each chapter were geographical and historical. Even more importantly, the questions which Hirsch examined and asked fell into geographical or historical categories, with the geographical far in excess of the historical. Therefore Hirsch's work appears to lie on the border of the two approaches since his organization was medical but his questions were predominantly geographical.

As in the first edition, so in the second there was a definite pattern to the chapters. However, it is significant that in the second he reversed the sequence and started with a discussion of the historical records of a given disease, followed by an examination of its contemporary geographical distribution and, in a few instances, its historical distribution. In spite of the geographical nature of the works, there are no maps included in either edition.

Hirsch's concern with things geographical did not end with the discussion on the geographical distribution of a disease. He then examined the literary evidence in an attempt to induce the association of a host of geographical variables in their relationship to a given disease. In all, Hirsch took a very strong geographical position in both a positive and a negative sense; it was the negative which dominated when he showed that a specific geographical factor was not consistent with the distribution of the disease.

Reference has been made to the quality of Hirsch's research. When reading his text one feels one is in the company of a great mind. His observations and comments were perceptive and, like James Lind a century earlier, he had the ability to take a critical look at widely-held explanations.⁴⁷ For example, regarding the geographical distribution of influenza he began by noting that climate could not be a key factor since the disease was found over the whole inhabited globe. Also, it had occurred in all seasons and in all weathers. The telluric conditions too had little influence, since influenza manifested itself with as great an intensity and to as great an extent on marshy as on dry soils, on impervious as upon porous soils, in valleys as on plateaus or in hills, on the coast as in the interior. In fact, he said, its ubiquity was not matched by any other acute infectious disease.⁴⁸ Hirsch was able to make these assertions because of the depth of his investigation based on the historical-literary record. For example, the chapter on influenza begins with a huge list of the locations and dates of epidemics from 1173 to 1875. It is the extent of the historical record that gave him added insight into the geographical distribution. In combination the

⁴⁷ Lind, James, *An Essay on Diseases incidental to Europeans in hot Climates, with the Method of preventing their fatal Consequences*, London, Becket, 1768. See also, F A Barrett, '“Scurvy” Lind's Medical Geography', *Social Science and Medicine*, 1991, 33: 347–53.

⁴⁸ Hirsch, op. cit., note 44 above, vol. 1, pp. 25–6.

locations and dates were the essence of his geographical-historical pathology. Hirsch looked beyond physical geographical co-ordinates to other geographical variables such as race to examine disease patterns. Frequently he concluded that race was without significance since in areas where there were racially mixed populations there was no pattern of affliction by race.⁴⁹ The modern reader will possibly fail to appreciate how revolutionary and courageous Hirsch was to draw such a conclusion.⁵⁰

He noted that the spread of some diseases seemed to show a variation between indigenous and foreign residents; records showed that outbreaks often occurred with the arrival of new ships in port. At this time physicians placed great importance on acclimatization but the ever alert Hirsch noted that in some cases it was the acclimatized who had the influenza and not the recent arrivals. He was particularly interested in the patterns of disease on islands because of their more isolated locations. This led him to ponder the nature of contagion and communicability.⁵¹

What was the reaction to Hirsch's second edition, given that the first edition had received specific endorsement by Virchow? Wernich, an author and editor who was known to have an interest in the geographical aspects of disease, reviewed the German version in the *Jahrbücher der in- und ausländischen gesammten Medicin* with great enthusiasm.⁵² Writing of volume one, he discussed the place of historical-geographical pathology in the overall field of medicine indicating that in the introduction he identified the purpose and the problems of this type of research:

When the author, inspired by his similar goals, undertook 25 years ago to throw light on what was still *an absolutely dark area* by laboriously collecting and methodically analysing the *untouched* historical-geographical material available at that time, he was not only confronted with problems associated with the subject matter itself. The lack of interest on the part of practitioners and *even* of clinicians, who were caught up in the treadmill of their system, was as great, on the one hand, as the uncritical chatter of collectors of material, on the other, which was oriented more to the miraculous than to the reliable. Whereas the latter decorated the disease of peoples who were difficult to reach and seldom encountered on the travel routes of that time with adventurous descriptions, with symptom groups which appeared incredible, at home they shrugged their shoulders and denied the new doctrine of acceptance, even disputing the *possibility* of its having a scientific basis. Added to this was the fact that immediately before Hirsch had begun his work, a seemingly brilliant (at first glance) attempt to base the theory of the geographical distribution of diseases on certain laws derived from physical geography had proved a decisive fiasco.⁵³

⁴⁹ The belief that many diseases were the result of racial differentiation was widely held at this period.

⁵⁰ Hirsch, *op. cit.*, note 13 above, vol. 1, p. 29.

⁵¹ Hirsch, *op. cit.*, note 44 above, vol. 1, pp. 29–30.

⁵² A Wernich, 'Handbuch der historisch-geographischen Pathologie, 1 Abtheilung', *Jahrbücher der in- und ausländischen gesammten Medicin*, 1881, 192: 306–8.

⁵³ *Ibid.*, p. 306: "Als der Vf. vor 25 J., begeistert von dem ihm in ähnlicher Gestalt vorschwebenden Zeile, es unternahm, durch eine mühevoll Sammlungen und methodische Sichtung des damals *unbearbeitet* vorliegenden den historisch-geographischen Materials Licht in *ein noch absolutes Dunkel* zu bringen, standen ihm nicht bloß diese rein in der Sache selbst liegenden Schwierigkeiten entgegen. So gross wie die Interesslosigkeit der Praktiker und selbst der in der Tretmühle ihrer Systematik sich umherdrehenden Kliniker auf der *einen*, war die kritiklose, mehr am Wunderbaren, als am Zuverlässigen sich erbauende Geschwätzigkeit der Materialsammler auf der andern Seite. Schmückten diese die Leiden der schwer erreichbaren und selten auf den damaligen Reiserouten zu bezeugenden Völker mit abenteuerlichen Beschreibungen mit unglaublich scheinenden Symptomgruppen aus,—so zuckten jene zu Hause die Achseln und verweigerten der neuen Doktrin das Bürgerrecht, weil sie selbst die *Möglichkeit* ihrer

Wernich noted in his brutally frank review of the second edition that before the publication of the first edition Hirsch was a “nobody”, neither a university professor nor a respected traveller, nor a recognized scholar, but simply a general practitioner and a public officer of health in the peripheral German city of Danzig (Gdansk). However that all changed; accolades poured in and he was appointed professor at Berlin.

In 1881 an anonymous reviewer in *Jahresbericht über die Leistungen und Fortschritte in der gesamten Medicin* (Annual Report on the Achievements and Advances of Medicine as a Whole), commented that, “[i]t is known how much stimulation Hirsch contributed to the upswing which has taken place in this field of medical research through his handbook of historical-geographical pathology”; also recognized are “the extraordinary contributions which the author has made to hygiene and the geography of disease through his work”.⁵⁴

A brief review in the *Lancet* proclaimed: “the book is a marvel of industry and erudition, and one which ought to be consulted by every writer on medicine”.⁵⁵ The anonymous reviewer added a conditional note:

To be sure, in these days the historical-geographical method is giving place to a mode of inquiry that goes to the root of etiology—we mean the search into the nature and properties of the virus of specific diseases, which now engages so much attention. But although this experimental method may have taught us much concerning the essential nature of disease and its propagation, it cannot replace the work done on the older plan, the comprehensiveness of which has thrown so vivid a light on the manner of diffusion of epidemic disease on a large scale.⁵⁶

The 27 March 1886 issue of the *Lancet* published a review of the second volume. The commentary was essentially descriptive but concluded with statements such as, “the whole work shows the master’s hand”, and “Professor Hirsch’s work is one of those which will be of permanent value, and one which no writer on medicine should fail to consult”.⁵⁷ A reviewer in the *Edinburgh Medical Journal* observed:

It is difficult to estimate accurately the amount of labour which such a book represents, but some idea may be formed when we state that there are nearly thirteen pages of closely printed references to the literature which has been consulted for the production of the chapter on influenza.⁵⁸

Naturally there were those who had criticisms. A writer in the *Medical Times* wrote:

wissenschaftlichen Begründung bestritten. Dazu kam, dass, unmittelbar bevor Hirsch an seine Aufgabe gegangen war, ein auf den ersten Blick blendender Versuch, die Lehre von der geographischen Verbreitung der Krankheiten auf gewisse aus der physischen Geographie abgeleitete Gesetze zurückzuführen, soeben ein entschiedenes Fiasko erlitten hatte . . .”.

⁵⁴ *Jahresbericht über die Leistungen und Fortschritte in der gesamten Medicin*, 1881, 1: 362–63: “Es ist bekannt, wie viel die Anregung, welche Hirsch durch sein Handbuch der historisch-geograph. Pathologie gab, zu dem Aufschwung beigetragen hat, der sich auf diesem Gebiet der medicin.” “Es ist hier nicht der Orte auf die ausserordentlichen Verdienste um die Hygiene und die Geographie der Krankheiten hinzuweisen . . .”.

⁵⁵ *Lancet*, 1884, ii: 64.

⁵⁶ *Ibid.*, p. 65.

⁵⁷ *Lancet*, 1886, i: 595.

⁵⁸ *Edinburgh Medical Journal*, 1884–85, 30: 153.

The deductions which he makes as to the aetiology of the several diseases must, of course, be looked upon apart. Different readers will put different interpretations on the evidence adduced; and indeed, for our part, we feel inclined to think that too great a tendency is manifested by the author to refer to the origin of diseases to “importation”, or some such verbal equivalent, and sometimes on what appear to us to be very slender grounds.⁵⁹

With the benefit of historical hindsight one recognizes that the reviewer’s concerns were valid and this was a weakness in Hirsch’s schema. However, the reviewer closed his comments on the first volume with the essential point about the work. He recognized that, “[t]he great point is, that Dr. Hirsch has brought within our reach information which must have been gathered from many libraries, and which, indeed, could only be gathered by a proficient linguist, and a man of very exceptional erudition”.⁶⁰ It is clear that the work was well-received and respected. However, since Hirsch was writing during a period when fundamental concepts in medicine were changing, what did later writers say?

Hirsch died in 1894, six years after completing the third volume. By that date the microbiological revolution was in full swing and it is worthwhile examining the comments in his obituaries. The *British Medical Journal* stated that Hirsch’s “monumental work broke ground which was almost entirely new”, but that due to advances, his “classification is already to some extent out of date, but the book is a storehouse of information which does not grow stale, and the multitude of references alone render it an indispensable part of every library of reference”.⁶¹

Eighty years after the publication of the second edition Eugen Beck wrote a twentieth-century evaluation titled, ‘Die Historisch-Geographische Pathologie von August Hirsch: Ein Beitrag aus dem 19. Jahrhundert zum Gestaltwandel der Krankheiten’ (The Historical-Geographical Pathology of August Hirsch: A Nineteenth-Century Contribution to the Transformation of Diseases).⁶² The title is a bit misleading since of all the diseases that Hirsch examined, Beck addressed only three: mumps, scarlet fever and diphtheria. However the article included a discussion which covered broader issues about the relationship and development of geographical medicine. With respect to the man himself, Beck observed:

At first Hirsch thought that he had created a new, fruitful scientific method in establishing a modern “geographical medicine”. In fact, he succeeded in refuting a large number of the unsubstantiated theories of the pre-bacteriological era through his critical compilation of facts. In this way he made a contribution to the expansion of the medical horizon of his time that should not be underrated because he also spared no pains to work on the remotest sources. Unfortunately he was not able to substantiate his conclusions, the majority of which were to be proved correct. The proofs were provided—some while he was still alive—through the findings of bacteriologists, whose results he definitely acknowledged but did not accept

⁵⁹ *Medical Times*, 1884, 1: 640.

⁶⁰ *Ibid.*, p. 640.

⁶¹ *British Medical Journal*, 1894, i: 275–6.

⁶² Eugen Beck, ‘Die Historisch-Geographische Pathologie von August Hirsch. Ein Beitrag aus dem 19. Jahrhundert zum Gestaltwandel der Krankheiten’, *Gesnerus*, 1961, 18: 33–44.

without reservation. This cautious attitude gave him a reputation for old-fashioned conservatism. After his death he was hardly quoted any longer, apart from his compilations being used for historical references.⁶³

As Beck indicated, Hirsch's approach pointed out the flaws in many widely-believed theories about the relationship of geography and disease. Since Hirsch was writing during a pivotal period in the history of Western medicine it is not surprising that some of the discoveries fundamentally changed ideas about causation. This placed Hirsch in a trap. Since he was so thorough in his methodology and careful of claims previously made, he did not accept a theory until it was proved. This admirable quality was construed as his conservatism, whereas to a large degree it was simply his good scientific method. Of course Hirsch was a nineteenth-century man and, although he did make some insightful predictions, the bacteriological revolution depreciated his work. Beck claimed that Hirsch's great work was reduced to a history of medical references but contradicted his own assessment a few pages later in the article when he stated: "However if we examine the conclusions on the individual chapters of the manual, especially those on infectious diseases, almost the only thing lacking is a look through a microscope—with its results for prophylaxis and therapy—and we are looking at modern medicine".⁶⁴

Most reviewers, whether Hirsch's contemporaries or more modern ones, comment on the tremendous number of sources that he used. Beck indicated that there were some 15,000, although he concluded that, "what often makes reading Hirsch's works a very laborious process, is the almost frightening amount of literary material used".⁶⁵ Almost everyone was greatly impressed by the breadth and depth of Hirsch's research.

Finally, what was the significance of Hirsch's writings to the development of medical geography and geographical medicine? First, he did achieve one of his goals, i.e. to draw attention to the geographical and historical aspects of disease? His exhaustive examination of the sources from the earliest of times, from the broadest of geographical locations, covering authors of many nationalities, and written in several languages was an impressive tour de force. Hirsch had argued in his criticisms of Fuchs's and Mühry's books in the 1850s that data for a proper geographical

⁶³ Ibid., p.35: "Hirsch glaubte vorerst, mit der Begründung einer modernen 'Geographischen Medizin' eine neue, fruchtbringende wissenschaftliche Methode geschaffen zu haben. Tatsächlich gelang es ihm, auf Grund seiner kritischen Zusammenstellungen von Tatsachenmaterial zahlreiche der haltlosen Theorien der vorbakteriologischen Ära zu widerlegen. Er leistete auf diese Weise einen nicht zu unterschätzenden Beitrag zur Ausweitung des ärztlichen Horizonts seiner Zeit, indem er keine Mühe scheute, auch entlegenste Quellen zu verarbeiten. Leider vermochte er seine Schlüsse, die sich in großer Zahl als richtig erweisen sollten, nicht zu beweisen. Die Beweise erfolgten teilweise noch zu seinen Lebzeiten durch die Funde der Bakteriologen, deren Resultate er durchaus anerkannte, jedoch nicht vorbehaltlos akzeptierte. Diese reservierte Haltung brachte ihm den Ruf eines unzeitgemäßen Konservatismus ein. Abgesehen von der Verwendung seiner Zusammenstellungen für historische Angaben wurde er nach seinem Ableben kaum mehr zitiert."

⁶⁴ Ibid., p. 38: "Wenn wir aber die Schlußfolgerungen einzelner Kapitel im Handbuch, vor allem über die Infektionskrankheiten, betrachten, so braucht es beinahe nur noch den Blick ins Mikroskop mit seinen Folgen für Prophylaxe und Therapie, und wir haben modernste Medizin vor uns."

⁶⁵ Idem, pp. 34 and 44: (p.34) "Nicht weniger als 15000 literarhistorische Notizen sind in zwei Bänden kritisch verarbeitet." (Here Beck cites, *Allgemeine Deutsche Biographie*, vol. 50, p. 361.) (p. 44) "Was nicht zum Ausdruck zu bringen ist und die Lektüre der Schriften Hirschs oft recht mühsam gestaltet, ist die geradezu erschreckende Fülle des verwerteten literarischen Materials."

August Hirsch

analysis were lacking. By the 1880s he was conscious that, while the quality of many of those data was still questionable, the rapidly accumulating quantity made the task increasingly formidable. He showed that the geographical and historical approach could advance knowledge. He did so by critically examining many of the currently held explanations. As a result of his extensive and profound studies he was able to show that many of these variables with longstanding acceptance had, in fact, dubious associations. Primarily, he did this with geographical explanations, showing that many tied to an underlying concept of miasma were based on incorrect assumptions. In doing so he actually predated the microbiological revolution, and even if there had been a long delay in the development of microbiology his work would have shown that many of the current “geographical” explanations did not withstand careful scrutiny. Although he was not trained to discover microbiological pathogenesis, his work helped to tear down concepts that had been accepted for centuries and, paradoxically, his research weakened the geographical and historical pathology that he was attempting to develop as a new scientific field in medicine. Therefore, the success of his criticisms aided in the temporary demise of medical geography and geographical medicine à la geographical pathology in this period. Nevertheless, August Hirsch was a major contributor in the long evolution of medical geographical and geographical medical thought.