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Chlorotic Girls, 1870–1920: A Historical Perspective on Female Adolescence

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Students of human development generally fail to appreciate the relevance of historical study to understanding biomedical phenomena, particularly those that relate to specific stages of the life course. Our identification of contemporary female adolescence with both anorexia nervosa and bulimarexia raises larger questions about the evolution of gender- and age-specific symptomatologies, questions that may be answered in part by reference to the history of American women. Consequently, this essay poses a deceptively simple but nevertheless important question: What can we learn from the historical study of a particular disease?

The complete answer is part of a more extensive investigation of the changing symptomatology of American girlhood from 1850 to the present.[1] What you will read here is not a biomedical diagnosis or an epidemiological explanation but a historical description and analysis of chlorosis, a disease which was linked solely to female adolescence in the period 1870–1920. While there was neither a precise constellation of symptoms nor a medical consensus as to its cause, there was agreement about the constituency for this popular form of anemia. Chlorotic girls, not boys, were the focus of attention from medical men, parents, and educators. In fact, chlorosis represented an entire conception of the female adolescent rather than a simple anemia.

This analysis is guided by a set of assumptions drawn from the fields of anthropology, history, the sociology of medicine, and human development. First, since the contexts for human development invariably shape physiological, cognitive, and behavioral growth processes,[2] historical study can and should be enlisted in the effort to define the relationship between structural and cultural changes and the evolving psychological orientations of young women. Second, modern anthropological studies, particularly Margaret Mead's (1928) pioneering description of adolescence as a biocultural transition,[3] clearly demonstrate that what is pathological within one cultural setting may be modal in another or vice versa. It is a logical corollary that variations with respect to what is atypical or modal can also occur over time within a single culture as well as cross-culturally. A striking case in point is the changing age of menarche in the United States; in 1833, the normative age for the onset of the menses may have been as high as 17; in 1972, it was 13 years of age.[4] Third, historical and sociological study reveals that in addition to the systematic study of the physical world and its phenomena, science is also an expression of our culture and our social relations.[5]

Thus, the clinical object—disease—must be regarded as both cultural artifact and somatic phenomenon. Consequently, a single disease may have a biography or life history all its own, responsive to social as well as medical cure. Previous studies point to the limited duration of chlorosis[6] without providing adequate cultural explanations for why it was that chlorosis was so prevalent among a single age and sex group. Hudson relates the rise of the disease to advances in laboratory medicine (particularly in the field of hematology) and the demise of the disease to a generalized improvement in nutrition (which he does not document). Siddall links the declining frequency of the disease to change in prenatal care, that is, the elimination of "bloodletting" in the care of expectant mothers.[7] Huang,

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the most extensive scholarly investigation to date, attributes the decline in incidence by 1900 to increased medical acceptance of the "iron deficiency hypothesis" and the parallel development of a successful treatment, namely, iron therapy in correct dosages. In this scenario, medical men, not patients, play a primary role in the cure. Figlio attributes the origin of chlorosis and other chronic diseases in late-nineteenth-century Britain to the exigencies of class. In England, chlorosis was linked to the idle daughters of the aristocracy and the bourgeoisie; yet their physicians, according to Figlio, were only "marginal members" of the middle class. As a result, both the cure and the explanatory etiology of chlorosis were shaped by class tensions. And as a cure, British doctors promoted a "medicalized condemnation" of the luxurious habits associated with the leisure of girls in the privileged classes.

In the American case, the diverse social settings in which chlorosis developed undercut a strictly class explanation. This article argues that medical pathlogies linked to adolescent girls may emerge at particular moments in time, their appearance and disappearance not entirely explained by empirical factors. Moreover, adolescent girls are more directly implicated in the cure for chlorosis than either the Hudson or Huang studies allow. Certainly chlorosis cannot be understood fully without exploring its meaning for the patient. What you will read here is a rather straightforward exposition of the relationship between the biomedical diagnosis of the disease, medical conceptions of the female adolescent, and the changing social experience of girls. This essay places chlorosis in the context of its "life and times" in order to suggest the complex interplay of adolescent physiology, medicine, and social and family life.

Writing in the fifth volume of his massive medical compendium, *A System of Medicine*, T. Clifford Allbutt (1905) set forth the distinguishing characteristics of chlorosis, a form of anemia named for the greenish tinge that allegedly marked the skin of the patient. Allbutt reported that chlorosis was a "malady of women, and primarily of young women at or about the age of puberty . . . consisting in defect of the red corpuscles of the blood, a defect partly of numbers, chiefly of hemoglobin; the plasma being constant, or even enriched."[8] The term chlorosis had been in use throughout the nineteenth century. In *Females and Their Diseases*, Charles Meigs referred to a "puberic condition" that "the French call *pâles couleurs*, and which we term green sickness or chlorosis."[9] In *The Lady's Manual of Homeopathic Medicine*, written some twenty years later, E. H. Ruddock defined chlorosis as "a condition of general debility affecting young women" caused by a "deficiency" in the red corpuscles.[10] To the modern eye, chlorosis appears to be merely a curious, archaic name for iron deficiency anemia, yet Allbutt's comprehensive medical discussion of the etiology and symptoms of the disease suggests no easy one-to-one equivalent.

Allbutt distinguished chlorosis from other anemias by its constituency (girls between fourteen and twenty-five) and on the basis of patient reports of difficult respiration or dyspnea. "The heart is irritable," he wrote; "it often palpitates to the great distress of the patient. The palpitation makes itself felt . . . on the least exertion."[11] In addition to shortness of breath and energy, chlorotic girls were said to experience a wide variety of symptoms, including "caprices and perversions" of the appetite, amenorrhea, inertia and melancholy, headaches, "mental disposition," and a "desire for sleep and repose."[12] The patients' complexions, however, were not always pale or conspicuously tinted, as the name of the disease suggested. "Chlorotic girls still blush readily enough," wrote Allbutt, "and even in the height of an attack of their malady some of them never lose a vivid carmine on the malar eminences."[13]

Allbutt's synthesis of the medical literature on chlorosis suggests how popular a malady it had become during the nineteenth century. Among female adolescents, chlorosis existed on a number of different diagnostic levels that are easy enough to hypothesize but almost impossible to quantify. After about 1870, some young women, probably those of the middle and upper classes living in urban or commercial centers with a well-educated professional class, were clinically diagnosed as chlorotics on the basis of actual analysis of their blood. In these cases, hemoglobin deficiencies did exist. Many other patients, however, were called chlorotic by less careful and less knowledgeable doctors simply on the basis of symptoms described to them in a medical interview. No blood tests were made on this group of patients; rather, the age and gender of the patients triggered the diagnosis. Since the

disease conveyed no particular status liabilities, it was easy enough to assign, particularly to those girls who may have used being "sickly" as a means of securing special attentions within the family or among friends. Still other girls, generally those without access to a physician or without the means to pay one, used the term chlorosis to describe their debilities and followed self-diagnosis with a home cure, that is, patent medicine designed to improve and strengthen the female constitution.[14]

Because chlorosis existed on both the clinical and popular levels, it was regarded as altogether commonplace and democratic. "The chlorotic girl," Allbutt wrote, "is known in every consulting-room, public or private. The disease is no respector of rank or fortune."[15] Maintaining that chlorotic girls came from farms as well as urban centers, from all walks and stations of life, Allbutt claimed the broadest constituency for the disease despite evidence, drawn from his own clinical practice, that might point to a hereditary propensity for the condition. For example, Allbutt reported that he had treated at least two, and possibly three, generations of chlorotic daughters in a single family. When another doctor associated the disease with blondes, suggesting a possible link to race, Allbutt dismissed the claim with the remark that the disease was simply "more conspicuous" in fair people. A 1915 analysis of the disease by physician Richard C. Cabot, later the founder of the Department of Social Ethics at Harvard, pointed to the large number of Irish domestics in Boston who, apparently, reported the disease. Yet, Cabot could not find much additional evidence for an Irish propensity for chlorosis since factory girls of the same ethnic background seemed not to be affected. Among the Germans, Cabot noted, girls who "have moved to the city, from the country" were likely to develop chlorosis.[16]

Rather than scientifically refine the constituency for chlorosis by establishing its connection to specific racial or social variables, Allbutt and others advanced the notion that all adolescent girls were potentially chlorotic: "Perhaps, every girl passes as it were, through the outer court of chlorosis in her progress from youth to maturity." In fact, Allbutt suggested that even those who appeared well might be suffering from the disease: "It is a common experience that many girls otherwise healthy and living under the best conditions of life become chlorotic; perhaps, no girl escapes it altogether; some, however, show it but little and recover rapidly." Finally, Allbutt posited that the physician was needed to distinguish between the healthy and the diseased girl. If, as Allbutt maintained, "every girl may be regarded as potentially chlorotic," then the boundary between the normal and the pathological was, in his own words, an "arbitrary one."[17] Every female adolescent raised the specter of chlorosis.

The actual cause of chlorosis was the subject of much debate. According to Huang, nineteenth-century etiologies focused on three major causes: environmental, moral, and constitutional.[18] Typical of the first is an 1869 medical guide that linked chlorosis to "confinement" in badly ventilated or poorly lighted rooms.[19] In the United States these environmental causes were present in all classes. Among factory girls, chlorosis was linked to poor diet and "bad living"; among college girls, the disease was linked to excessive study and lack of outdoor exercise. Different doctors had their own favorite constitutional and moral interpretations, ranging from "derangement of the menstrual function," to "impoverished blood," to a "disease of the nervous system," to "a morbid condition of the organs of generation." Allegedly, the last of these was the result of masturbation. One medical adviser, urging mothers "to find out whether the disease may not be induced by secret habits," suggested that girls be watched "unobtrusively" and allowed "as little as possible to remain alone."[20] Although masturbation was not widely hypothesized as a direct cause of chlorosis, doctors like Allbutt were unwilling to disassociate the "master vice" completely. Allbutt advised his fellow physicians that in looking for the cause of chlorosis "if epithelial debris be found repeatedly in the urine, masturbation must not be forgotten, and corroborative evidence of the habit . . . detected."[21]

Menstruation, however, was almost always implicated in the etiology of chlorosis because the disease was associated with puberty in girls, not boys. In *Modern Medicine* readers found the following tentative analysis: "Judging from the fact that chlorosis is confined to the female, and that it occurs in the period immediately after the establishment of the function of menstruation, we can hardly help suggesting that there is some immediate relation

between menstruation and chlorosis, but we can go no further. We have nothing to say as to what that relation is, or whether we are right in supposing any such relation exists. The figures suggest it; that is all we can say."[22] Medical men were obviously confused by the fact that some girls developed chlorosis even before the onset of the menses, making a direct causal relationship unlikely. Consequently, popular medical tracts, such as Lucien Warner's *A Treatise on the Functions and Diseases of Women* (1875), glossed the issue of the premenstrual chlorotic girl, offering this common interpretation of the origins of the pathology: "the real seat of the disease is in the nervous system, although it manifests itself chiefly in impoverishment of the blood. It occurs most frequently at the time of puberty, because the system is then in such a transition, that it requires slighter disturbing causes for its development."[23]

Clearly, in the transitionary period from childhood to adulthood girls were "at risk" for disease. In women, puberty and the onset of the menses marked the beginning of a period of psychological as well as physiological crisis that would continue until menstruation was regularlized or "firmly established." Medical tracts urged both girls and their parents to consider the need for a special "hygiene of puberty."[24] Because of "large demands upon the resource of the female adolescent system," Lucien Warner advised close parental supervision of the diet, clothing, exercise, sleep, and mental and moral training of girls. In the 1870s, Dr. Edward Clarke, professor of medicine in Harvard College, argued against higher education for young women precisely because he believed that the "complicated apparatus peculiar to the female" needed time and ease to develop, free from the drain of intellectual activity. Clarke's influential but controversial book, *Sex in Education* (1873), presented case studies, allegedly drawn from clinical practice, of girls whose "catamenial function," ovarian development, and general health were ruined by inattention to the special demands of their new "periodicity."[25] In the view of many, female adolescence was especially dangerous because menstruation raised the specter of multiple crises of a social as well as a medical nature. Only marriage insured a formal, guaranteed, and effective resolution of the difficult transition period. As a result, marriage was sometimes suggested as a cure for chlorosis.[26] Warner wrote of this kind of therapy: "It should in no case be resorted to except upon the recommendation of some responsible physician."[27]

While most medical men implicated menstruation in the etiology of chlorosis, some did not. For example, in *Chlorosis: The Special Anemia of Young Women* (1897), E. Lloyd Jones, an instructor in pathology at Cambridge and a research scholar for the British Medical Association, reported that there simply was "not sufficient evidence to show that chlorosis is due to menstrual loss." Rather, Jones proposed an interpretation of the causes of the disease that reflected new research techniques and insights derived from the science of hematology. Chlorosis, Jones argued, was best understood in relation to the blood changes that occurred at puberty, particularly a drop in specific blood gravity among females. Using the centrifugal method (whirling tubes of blood at a speed of 1,000 rpm), Jones discovered that the average ratio between serum and corpuscles could be differentiated by gender and age. This disparity in female and male blood was presented in a number of charts and tables, which gave the treatise an empirical aura and in turn documented in chlorotic girls a reduction in the amount of hemoglobin, a diminution of the number of red corpuscles, and an increase in the proportion of serum to corpuscles. Yet, like Allbutt, Jones had difficulty distinguishing the normal from the pathological: "the blood of the chlorotic subject exhibits an exaggeration of the fall in specific gravity which occurs in healthy young women about the age of puberty; and, indeed, it is likely that I included among my healthy women some who were in reality chlorotic."[28]

If hematology failed to establish absolute distinctions between the blood of healthy and diseased girls, diagnosis was confused even further by the fact that the pathological was also regarded as the ideal type. That is to say that girls with the disease were also the most attractive and, possibly, the best potential mothers. In fact, Jones claimed that chlorosis in adolescence was positively correlated with high fertility. "Those women who have the lowest specific gravity of the blood, and the largest number of brothers and sisters," Jones wrote, "are generally fair, with pretty pink and white complexions, blue or light eyes, fine hair, with a

goodly amount of subcutaneous fat. Such women are, I believe, unusually prolific."[29] Jones's attention to the looks of the chlorotic girl was not unusual. According to one medical report, chlorosis was "the anemia of good looking girls."[30] Medical men generally agreed with Allbutt's statement of their physiological normality: "chlorotic girls do not lack size, nor do they fall away from the main lines of development."[31] Jones, however, took the association between chlorosis and good looks a step further, claiming that while the "lips and ears" of a chlorotic girl might be "pallid," her cheeks certainly were not. Jones asserted that the face of the chlorotic girl remained a "pretty pink and white color" precisely because her blood vessels were so "well-filled."

The medical notion of the chlorotic girl as simultaneously diseased, fertile, and attractive fit within the framework of the Victorians' sentimentalization of sickly women.[32] In the nineteenth century, adult women in the United States were prone to a generalized invalidism as well as both hysteria and neurasthenia, the latter a polite but "profound physical and mental exhaustion."[33] Neurasthenia, like chlorosis, had an imprecise constellation of symptoms including sick headaches, palpitations, and nervous dyspepsia. (In his classic work, *American Nervousness* [1881], George Beard called neurasthenia "slippery, fleeting, and vague.")[34] For the study of female adolescence the crucial point is that invalidism and neurasthenia were not uncommon pathologies among mothers, aunts, teachers, and family friends who conditioned the psychological orientation and experiences of younger women. Chlorotic girls and sickly mothers did share some common symptoms and probably legitimated each other's complaints. It is also important to understand that among nineteenth-century physicians the same cluster of symptoms (e.g., exhaustion, headaches, heart palpitations, and indigestion) could result in different diagnoses depending on the age and gender of the patient. In this way, the labeling of medical conditions by nineteenth-century doctors reinforced the gender and age categories that were the basis of the Victorian social order.

The coexistence of both disease and physical attractiveness among chlorotics was also a telling reflection of the state of medical and scientific knowledge, particularly with respect to ovarian function. For example, Jones, who was typical of many late-nineteenth-century physicians, attributed the chlorotic girl's good looks, that is, her rosy glow, to the fact that her vessels were "well-filled." Moreover, he maintained that girls bled from the finger more easily than boys. These claims were based on the belief that in chlorotic women there was an absolute increase in the total volume of blood. Jones and others attributed the alleged increase in blood volume to the tendency to "store up blood during the intermenstrual periods"; at each menstrual period, girls would receive "blood changes" or experience "fresh additions to the reserve laid aside." Allbutt's experience confirmed Jones's view; he posited that chlorosis was "the exaggeration of the fertile blood, of blood, that is, which has for its end the storage of nutritive materials for the foetus during pregnancy."[35]

The clinical portrait of the chlorotic girl was obviously confused by a lack of understanding of menstrual physiology. Until the work of Westphalen in 1896, prevailing theory held that menstruation was set in motion by the "tubal nerve," that is, a "nerve irritation" produced by the ovary caused the blood vessels to dilate just prior to ovulation; if unfertilized, the ovum was swept away by the flow. Westphalen first described the cyclical changes in the uterine lining and the continual process of building up and breaking down of that lining.[36] Jones, however, who had only a rudimentary understanding of what took place in the uterus during menstruation, was able to associate chlorosis with greater blood volume and fecundity at the same time that he reported amenorrhea in his chlorotic patients. Ultimately, Jones revealed his ambivalence about the simple hematological calculus he had proposed, calling chlorosis "a chronic autointoxication brought about by some substances which are probably the products of uterine, fallopian or ovarian metabolism, and producing effects on the blood by inducing changes in the gastrointestinal canal by the medium of the nervous system."[37]

In calling chlorosis an "autointoxication," Jones raised the issue of the involvement of adolescent girls in the creation of their own disease. As already noted, chlorosis was the kind of condition that depended in large measure on self-reporting or reports from parents. According to clinical observations, many adolescents presented themselves at the office of the family doctor with a diagnosis

in hand. "I think my blood must be out of order," was the characteristic analysis in the experience of an Erie, Pennsylvania, practitioner. Still other patients reported what their peers had said: "friends . . . commented on the lack of color in my face."[38] According to Lucien Warner, concerned parents recited the sad case histories of daughters who were "unusually dull and listless," whose "fits of sadness and weeping" appeared to be without cause. Ruddock reported that his chlorotic patients were "sombre and taciturn, weeping without cause; and sighing involuntarily."[39] Generally, however, the symptoms described by late-nineteenth-century physicians were physiological rather than psychological, although the doctors never promoted the notion of a happy chlorotic or discredited the idea that the ultimate cause might be emotional (e.g., lovesickness, homesickness, shock). The most commonly reported symptoms were progressive loss of strength, difficulty in respiration, and loss of appetite.

Lethargy and shortness of breath received mention but little elaboration; Allbutt noted that girls who once could "trip upstairs" easily were reduced to a state of inactivity by chlorosis. More interesting, however, were the eating disorders associated with chlorosis, all of which acted to confirm what the 1897 *American Journal of Medical Science* called the "capricious appetite" of young women. Nearly thirty years before, a homeopathic medical guide for women noted that in the chlorotic girl the appetite was "lost or so perverted that substances such as chalk, cinders, etc. are desired."[40] In 1875, Lucien Warner's popular medical compendium associated chlorosis with "loss of appetite, loathing of food, and often a desire which almost amounts to a passion, for such indigestible and repulsive articles as charcoal, slate-stones, chalk, plaster, flies, bugs, and other similar substances."[41] Another report stated that the commonest dietary abnormality among chlorotics was "a special fondness for pickles and sour things."[42]

In 1897, E. Lloyd Jones linked chlorosis to a less bizarre diet, but to an eating "disorder" nonetheless. Chlorotic girls, he observed, were not simply prone to the excessive consumption of carbohydrates; they eschewed an important nutritive source: "Almost all chlorotic girls are fond of biscuits, potatoes, etc. while they avoid meat on most occasions, and when they do eat meat, they prefer the burnt outside portion."[43] Meigs confirmed the same problem in a dialogue between a physician and an adolescent girl. "'Oh, I like pies and preserves but I can't bear meat,' the young woman reportedly told her family doctor."[44] Apparently, while many chlorotic patients assured their doctors that they ate meat, physicians regularly found that their meat eating actually involved only the scantiest quantities of burnt, overcooked parts. J. H. Montgomery, a Pennsylvania physician, observed this "disgust for meat in any form"; a medical guide reported that among chlorotics "the appetite for animal food completely ceases."[45] In articulating his cure for chlorosis, Allbutt wrote: "it is of the first importance to overcome the common distaste for meat. Girls will say that the entry of a dish of hot meat into the room makes them feel sick."[46]

The repugnance for animal flesh among Victorian adolescents clearly had a larger cultural significance. In fact, meat eating was tied to female physiology, sexuality, and, consequently, behavior as an adult woman. In negotiating the difficult biological transition to adulthood, Warner suggested that meat eating could actually accelerate sexual development; at the same time, a restriction on the carnivorous aspect of the diet could tame premature or rampant sexuality as well as overabundant menstrual flow: "If there is any tendency to precocity in menstruation, or if the system is very robust and plethoric, the supply of meat should be quite limited. If, on the other hand, the girl is of sluggish temperament and the menses are tardy in their appearance, the supply of meat should be especially generous."[47] In excess, meat eating was popularly linked to nymphomania.[48] A stimulative diet of meat and condiments was recommended only for those girls whose development of the passions seemed, somehow, "deficient."

If a meatless diet could insure their sexual morality, it is no wonder that so many middle-class girls, aspiring to be good, evidenced distaste for a food that, allegedly, increased the menstrual flow and made them more passionate. In making the refusal of meat a positive social virtue, middle- and upper-class girls increased the likelihood of their incurring iron deficits of exactly the kind that led to iron deficiency anemia. Moreover, Allbutt's important synthesis of the medical literature on chlorosis reveals that even as early as 1905, American girls had fallen victims to the grand obsession:

slimness. "Many young women, as their frames develop, fall into a panic fear of obesity," Allbutt wrote, "and they not only cut down on their food, but swallow vinegar and other alleged antidotes to fatness."[49] Consequently, voluntary restrictions on diet were part of female adolescent life in the United States before the twentieth century. Whether a girl chose to avoid meat because she found its associations "disgusting" or she ate less for fear of expanding her waistline, the fact of the matter is that these cultural attitudes were in place, tying feminine goodness and attractiveness to an ideal body type. Thus, there were cultural sources as well as organic reasons for the "loss of appetite" and the "peculiarities of diet" associated with chlorotic girls.

As therapy for these patients, physicians debated the effectiveness of rest versus outdoor exercise. However, most doctors prescribed daily supplements of iron salts even though there was little consensus on how organic and inorganic iron actually affected the blood and few studies of the iron intake of chlorotics.[50] Blaud's Pills, a well-known patent medicine that combined iron and potassium carbonate, were frequently cited by doctors writing about the clinical treatment of chlorotic girls. Iron supplements from drug manufacturers were praised by professional medical men; Allbutt, in fact, called the patent medical business "our excellent allies." Popular advertising in newspapers and magazines promoted "blood and nerve remedies" by the score, keeping pace with both the physicians' clinical diagnosis of chlorosis and the girls' self-reporting and self-diagnosis of their weak condition. E. Lloyd Jones typically prescribed Blaud's Pills after each meal along with small doses of bismuth salicylate with morphine (to relax the stomach before eating) and a diet of underdone meat, no potatoes, and little bread. J. H. Montgomery, who also ordered sulphate of iron in doses of 6–12 grains daily, was careful to point out that the iron supplements should not be prematurely discontinued as soon as the hemoglobin reached normal. Rather, Montgomery, warning of relapse, encouraged continuation of the supplements for at least two months and the cultivation of "better habits." Another source estimated that "under treatment" the disease was usually relieved "well within six months" and recommended that the patient go from one 0.3-gram pill after each meal in the first week to three pills after each meal, or 2.7 grams per day, in the third week.[51] Despite medical faith in the efficacy of supplementary iron, doctors were willing to concede that "it is also true that patients will improve without the administration of iron, provided we correct their constipation and improve their general hygiene."[52] Generally, however, a regimen of Blaud's Pills accomplished a satisfactory "cure." Once past the age of twenty-five, or at such time as they married, the risk of developing chlorosis was drastically reduced.

By 1900, chlorosis was already on the decline; by the 1930s the disease was moribund. Statistical evidence from both the wards and the dispensary at Massachusetts General Hospital indicates that between 1898 and 1907 the number of cases declined by nearly 90 percent.[53] Practicing physicians confirmed the same trend. In 1915, Dr. Richard C. Cabot reported: "We do not see chlorosis now as we used to ten years ago." Cabot carefully described how this decline in cases could not be explained away by "supposing that we now call the same cases by another name."[54] In other words, chlorosis was not simply a diagnostic entity that was subsumed into a different category. By 1936, an Iowa physician, W. M. Fowler, was moved to eulogize the disease in an article entitled "Chlorosis—an Obituary," published in the *Annals of Medical History*. "What disease," Fowler asked, "can compare with chlorosis in having occupied such a prominent place in medical practice only to disappear spontaneously while we are still speculating as to its etiology?"[55] Thus, the chlorotic era, which reached its peak in the last three decades of the nineteenth century, came to be regarded as something of a medical curiosity at the very time when massive economic deprivation, in the form of the great depression, should have increased the constituency for anemias of all kinds.

"Very little of the decrease in chlorosis can be attributed to direct medical intervention," writes Robert P. Hudson, a contemporary medical historian.[56] If the demise of chlorosis is not the self-conscious accomplishment of American medicine, how then did it occur? Hudson claims that certain changes in the day-to-day life of Americans in the first few decades of this century had consequences for the future of chlorosis, specifically, a general improvement in nutrition, diminishing prejudice against the eating of meat,[57] the abandonment of corsets or "tight lacing," and a related increase in

physical activity among women. While all of these changes are relevant, they fail to capture the essential dynamic of the chlorotic era. That is to say, neither more effective iron therapy, improved nutritional levels, nor increased physical activity, each a legitimate biomedical factor, provides the essential cipher for decoding the social construction of chlorosis.

At a basic level, chlorosis depended for its existence on the popular notion that adolescence, marked by the onset of the menses, made a girl ripe for disease. So long as medical men misunderstood the true nature of the ovulatory cycle and the menstrual flow, women did, in fact, appear to be strangely afflicted. Important discoveries that marked the beginning of the modern endocrine perspective on menstrual physiology came only after 1900; in particular, the 1908 description of the cycle of changes in the endometrium, by Hitschmann and Adler, paved the way for a more accurate understanding of the significance of menstruation. Between 1903 and 1928, the role of ovarian hormones in triggering the cycle was established through animal experimentation.[58] Taken together, these and other developments in the history of gynecology finally condemned the notion of menstruation as a "crisis." Once it was discovered that the menstrual cycle actually lasted for twenty-eight days and then routinely began again, it became difficult to argue that the process itself made adolescent girls susceptible to disease. In effect, the rise of endocrinology in the early twentieth century undercut the medical diagnosis of chlorosis. Informed and better-educated doctors were simply less likely to assume that adolescent girls were either "at risk" or sick.

Finally, the patients and their families must be implicated in the demise of chlorosis. However iatrogenic medical practice may be,[59] the prevalence of chlorosis depended both on young female patients' presenting a certain set of complaints and the biomedical diagnosis and labeling by medical men. Girls who were told that they had chlorosis learned how to have it from family, friends, and the popular press as well as from their doctors; their behavior as "sick" persons was surely affected by the expectations of the people and the institutions with whom they interacted. The fact that neurasthenic conditions were fashionable among the adult women who superintended their school, church, and family life is essential to understanding the psychology of chlorotic girls. It may well be that nineteenth-century mothers and daughters, particularly among the middle and upper classes, were bonded together by their common ill health rather than their vigor.

As social and cultural values changed, American girls began to choose activity over inactivity, the meeting place over the malaise. Chlorotic girls, with their problems of respiration and limited energy, were aptly suited to a domesticated nineteenth-century environment where they could conscientiously take their iron pills and their requisite afternoon naps. As the lives of girls became more public and standardized, chlorosis became a problem. Geared increasingly to attendance in public high schools, programs of physical activity, peer-group associations beyond the home and family, as well as the "dating system"[60] and the media of romance (film, radio, and popular press), girls replaced concern about their blood with a different set of anxieties about face and figure.

So, too, parents and parental expectations changed. For American mothers, the years between 1900 and 1920 were significant for the emphasis put in the popular women's press on the idea that there was a "scientific nutrition" with application to the home. Dieticians such as Sarah Tyson Rorer, domestic editor of the *Ladies' Home Journal* from 1897 to 1911, charged American mothers with "building and repairing the human body" through right diet.[61] Other pioneers in applied nutrition addressed the general public through bulletins issued by the U.S. Department of Agriculture. In the 1890s, W. O. Atwater developed dietary guides which Ellen Swallow Richards, founder of the home economics movement, translated into family menu planning. Between 1916 and 1923, the USDA popularized the concept of five basic food groups, adapting it for kitchen use.[62] Once this information was available and incorporated into the day-to-day domestic routines of American women of the middle class, mothers were simply less likely to tolerate having a nutritional disease in the home.

In effect, both mothers and daughters had moved beyond invalidism and chlorosis. Complaints of weakness and loss of appetite, as well as the notion of "rest cures," simply did not "fit" with the plethora of institutions and programs servicing Ameri-

can girlhood by World War I. By 1920, a girl with chlorosis was not only a social "drag" but a liability with respect to her own mother's perception of herself as a competent domestic manager and nurturer. If, as the contemporary Geritol commercials repeatedly remind us, iron deficiency anemia never disappeared, chlorosis surely did precisely because the cultural and familial context that stimulated its construction changed dramatically.

NOTES

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1 Female adolescence is a largely neglected area of psychological, sociological, and historical study. See G. H. Elder, Jr., "Adolescence in historical perspective," in *Handbook of Adolescent Psychology*, ed. J. Adelson (New York: Wiley, 1980), for commentary on this lacuna in the developmental literature. Among historians, important studies of adolescence and youth in Europe and the United States by John Gillis (*Youth and History: Tradition and Change in European Age Relation, 1770–Present* [New York: Academic Press, 1974]), and Joseph Kett (*Rites of Passage: Adolescence in America, 1790 to the Present* [New York: Basic, 1977]), focus primarily on the patterns and behaviors of males. Carol Dyhouse's *Girls Growing Up in Victorian and Edwardian England* (London: Routledge & Kegan Paul, 1981) is essentially a study of the socialization of girls in English schools.

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chapter entitled "Diseases of body and mind," Hall detailed various nosological peculiarities of adolescence including chlorosis (1:260). Hall's conception of "periodicity" and the consequent crisis of female adolescence was expressed in romantic metaphors: "Puberty for a girl is like floating down a broadening river into an open sea. Landmarks recede, the water deepens and changes in its nature, there are new and strange forms of life, the currents are more complex, and the phenomena of tides make new conditions and new dangers. The bark is frail, liable to be tossed by storms of feeling, at the mercy of wind and wave, and if without chart and compass and simple rules of navigation, aimless drifting in the darkness of ignorance, amidst both rocks and shoals, may make of the weak or unadvised wrecks or castaways" (1:507–8).

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