they are latent, can we extirpate the germ. It is only by destroying these that we can utterly destroy this disease. A week after destroying them it is my habit to make an injection with nitrate of silver. I think I can then with a clear conscience consent to that man's marriage.

Why should this be in the hands of a specialist? Are not the lives of women and children of sufficient importance to the general practitioner? I hold that the time has come when we should have the temerity to put ourselves on record as advocating the enactment of a law requiring, as a condition necessary to marriage, the certificate of a physician that this man who proposes to get married can not infect his wife with gonorrhea.

DR. HUTCHINSON, of Iowa—I think Dr. Valentine's remarks ought to be emphasized by this Section. The number of deaths caused by the gonococci is something to which the profession is just waking up. I happened to have a most painful case of some trouble of this nature brought to my notice a short time ago. We ought to insist upon sounding a danger signal with reference to this infection that is impairing the fruitfulness of the finest women in our country. We should advocate some sentiment on the subject. It would be a difficult law to enforce, and I do not think we can get at the evil through legislation. I should regret the taking of any action that would prohibit marriage on the part of any portion of humanity, because I believe that it might result in something worse. I think, however, it would be well to call the attention of the public to the danger to which women and children are exposed by this disease.

THE ETIOLOGY OF INFANTILE DIARRHEA.

Read in the Section on Diseases of Children, at the Forty-sixth Annual Meeting of the American Medical Association
Baltimore, Md., May 7-10, 1895.

BY ROSA ENGELMAN, M.D.

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In order to arrive at any just conception of the subject, attention must be directed to the entire alimentary canal, as well as to milk, the staple food of infancy and childhood. A straight almost indifferentiated tube swarms from mouth to arms, with facultative, obligate, saprophytic and pathogenic germs. Milk, particularly during the heated term, is fertile soil for various fermentations, microbial contamination, and the exogenous as well as endogenous development of toxins. An unclean mouth, a slight error in diet, constitutional taint, immature sensitive cellular metabolism invite these germs to unusual lodgment and activity.

Their great number and variety exclude a specific relation to the particular disease manifestations under consideration. The question resolves itself into a discussion of the toxemic, septicemic or pyemic genesis of the several morbid gastro-intestinal disturbances, in which not one or a few, but many and various microorganisms play a part.

Escherich long since proved that there is a great simplicity and uniformity of bacterial vegetation, and that increase and variety was due to changes in diet.

He demonstrated the constant harmless presence of the bacterium *lactis aerogenes* and bacterium *coli commune* in the upper and lower bowel, respectively, and their relationship to normal digestion. The assumption of pathogenic attributes by these germs was likewise disclosed.

The rise and evolution of the biologic field revealed the shortcomings of a purely pathologico-anatomic classification of infantile diarrhea. This disorder was in turn ascribed to: 1, disordered structure and function inherent to an undeveloped organism; 2, atmospheric and telluric influences; 3, the chemic constituents, metamorphoses and amount of food ingested; 4, the omnipresent germ. The far-sighted Hueppe foresaw the dangers of biased opinions. He says:

"For a time, under the influence of Darwinism, bacteriology ran into absolute generalizations, and differentiating signs were not sufficiently valued. Then the opposite mistake was made, in that differences were overrated and a one-sided conception of microbial species, specific effects and special products was adduced. Toxemia of intestinal origin is foreshadowed by him in his statement that the specific microorganism is not alone the cause of the disease. The significance and evolutionary phase of the above cited factors were for a time swamped in the omnipotent germ theory. The effort to discover specific microorganisms as the causative agents of the different degrees and forms of diarrhea proved futile, but led to the revelations of Escherich, Baginsky, Stadlhaugen, Hueppe, Huebner, Booker, Jeffries, Abelsons, Sevestre, Vaughan, Czerny, Moser, and many others. They established the non-specificity of the various gastro-intestinal diseases, and gave to us a wide knowledge of the untold microbial hordes, regular, accidental or pathogenic occupants of the alimentary tract.

These scientists likewise confirmed the interdependence of bio-chemic operations and the relations of these germs to the several diarrheal disorders and give to us a reasonable basis for the following postulate: indigestion, slight to severe gastro-intestinal catarrh, and even a foudroyant attack of cholera infantum may be primarily ascribed to an intoxication; this intoxication being caused by an absorption (little or much, slow or rapid) of toxic, tissue and bacterial products, elaborated without or within the body. Intestinal lesions ensuing, the microbial horde, led by such germs as the bacterium *coli commune*, bacterium *lactis aerogenes*, staphylococcus *pyogenes*, streptococcus *pyogenes*, pneumococcus and others, invade the blood and give rise to general systemic or localized infection, a fulminate or insidious septicemia. Thus also can we secondarily account for pneumonia, meningitis, encephalitis, nephritis, etc., of intestinal genesis.

An accumulation in the food, and concentration in the gut of saprophytes and their toxins explain the inception of a gastro-enteritis, the continuance of which maintains the irritation of an exceedingly susceptible mucous membrane and its nervous director, the colic plexus.

The unstable abdominal brain that presides over an enormous circulatory territory succumbs to the saprogenic poison. Consequently neither specific nor pathogenic intermediary need be concerned in an attack of cholera infantum. From the fact, however, that the latter includes a number of morbid entities, it might at another time be the result of an overwhelming septicemia instead of toxemia. On the other hand, chronic enterocolitis and pedatrophs might arise from sluggishly acting germs associated with slow, prolonged, poisonous absorption. It has recently been shown that acute enterocolitis results from the invasion of the blood by numerous germs that have been hitherto considered specific only to certain other processes.

A. Rodet and G. Roux in 1892, differentiated between the infectious and poisonous properties of the bacterium *coli commune*. It and the bacterium *lactis aerogenes* had been acknowledged harmless intestinal tenants. The former's pathogenic and pyogenic attributes were now recognized as well as its areas of invasion, viz., serous surfaces, skin, glands, respira-

tory and urinary organs. It is thus the admitted disease inciter of such sundry conditions as enterocolitis, pneumonia, meningitis, encephalitis, phlegmon, peritonitis, etc. Its clinical, pathologic and biologic resemblance to the typhoid bacillus is being carefully considered.

Fraenkel tells us that, "pathogenesis is the most inconstant thing in the character of many species of bacteria." Fraenkel's pneumococcus, often a most virulent inflammatory exciter, is likewise a regular tenant of health salivary and nasal secretions as are the pus germs and Löffler's bacillus.

A. P. Ohlmacher in the *New York Medical Journal* April 27, reports finding the diphtheria bacillus in a pneumonic lung in which the diplococcus of pneumonia was absent. The diplococcus was obtained, however, in cultures made from the pus in the meningitis of the same patient. Future research will probably throw light upon the curious analogies and associations of these microorganisms and their more definite relations to such diverse disease manifestations. Much work in this direction has, however, been accomplished in the study of infantile diarrhea. The non-specificity of this affection has been proved, as has also its general toxemic and septicemic origin.

Sévestre as early as 1887 said: "A general infection, especially a condition of pulmonary congestion and broncho-pneumonia, may develop, secondary to fetid diarrhea and infectious enteritis." Under his supervision, Gaston and Renard, by capillary puncture of pneumonic lungs during the life of children suffering from enterocolitis, secured therefrom and from the stools of the same patients, pure cultures of the staphylococcus, pneumococcus and bacterium coli commune and other microbes. Their control experiments upon animals demonstrated that these germs entered the general circulation through the intestinal lymphatics and lodged in the first filter, the lungs.

Rossi Doria publishes an epidemic of diarrhea due to the bacterium coli commune, that remaining *in loco* caused acute enterocolitis, that entering the circulation caused a systemic typhoid-like infection as proven by the pathologico-anatomic findings.

Czerny and Moser recognizing the general infectious character of infantile diarrhea, and traced its source through the lymphatics into the general circulation. They discovered the staphylococcus pyogenes, streptococcus pyogenes, bacterium coli commune, bacterium lactis aerogenes, and other well-known disease progenitors in the stools and circulating blood, of twelve out of fifteen babes suffering from uncomplicated enterocolitis. Their work was carefully controlled by experiments upon dyspeptics, healthy children and animals. Their pathologic findings in the lungs and kidneys corroborated their bacteriologic and microscopic work. All these careful observations but emphasize the dictum as to a general non-specific systemic infection in acute gastro-enteritis. The slighter and earlier intestinal disturbances are of toxemic origin and due to milk fermentation and contamination. Chronic enterocolitis is the result of a slower, more insidious poison or sepsis. Cholera infantum is either or both an overwhelming toxemia or septicemia. Associated conditions, or the so-called secondary complications are of clearly septicemic or pyemic character, in which not one but several different germs play an important rôle. Dyspepsia, acute and chronic enterocolitis, cholera infantum,

may be but different and various degrees of toxemia and septicemia dependent upon numberless and manifold saprophytic, pathogenic microorganisms.

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COLITIS IN INFANCY AND CHILDHOOD.

Read in the Section on Diseases of Children, at the Forty-sixth Annual Meeting of the American Medical Association, at Baltimore, Md., May 7-10, 1895.

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Colitis, in the adult, often occurs as a primary disease, but this is rarely the case in infancy. At an early age it usually begins as an enteritis and is most always caused by indigestible substances irritating and obstructing the small intestine. Bottle-fed infants are particularly prone to this disease and I believe that most of those who die, waste away from its effects.

Intussusception is spoken of, as of frequent occurrence in connection with it. I have never seen it, though obstruction more or less complete, I believe, is always present. Heat is an important factor in its causation, as is proved by its being confined almost exclusively to the hot months of the year. A heated atmosphere not only renders the infant's bowels incapable of digestion, but also its food unfit for use, even when we can not perceive it by the taste. An enteritis sometimes runs into a colitis, but the former is generally converted into the latter by treatment with opiates and astringents. A child that is deriving its sustenance from a healthy mother, when attacked by inflammatory diarrhea from being overheated or from any other cause, can generally be relieved at once by the administration of tincture of