enough complain of headache and stomach-ache. This is followed by sudden repeated vomiting. The tongue is coated, the breath offensive and the bowels generally constipated, although there may be a relaxed condition of the intestine. There is a slight temperature of 101° or 102° F.

Fred D., two and one-half years of age. Had always been healthy and strong until he was one and one-half years old. At this time the parents became less careful as to his feeding. He has been more or less constipated since birth. About three months ago he was given some grape-fruit just before his milk feeding. This was followed by an acute upset, and, according to his mother, his stomach would retain nothing for five days. He is a very nervous child, always has dark rings under his eyes, and sleeps poorly, awaking at the slightest sound and lying awake half of the night. He has nocturnal enuresis. Since his last attack, his breath has been foul. There has been a slight loss of weight, and lately he has been passing some mucous in his stools.

The morning of the day I saw him, he was given some peppermint creams by his father and then went for a long sleigh ride, the morning being very cold. On his way home he began to vomit copiously and became quite prostrated.

I found him very drowsy and very nauseated. The skin was cool, and the pulse rapid and weak. The temperature was 97.2° F., but within an hour it arose to 100.1. The stool obtained by enema was well digested but foul and contained considerable mucous. The urine was very acid, the indican and urophaen greatly increased. After the next forty-eight hours the vomiting ceased and the indican disappeared, the child having been put on buttermilk.

INTESTINAL TOXEMIA.

While components of dead bacteria furnish a certain amount of poisonous proteins, and living bacteria in the intestine excrete ferments or toxins, substances produced by bacteria from the culture media are possibly the most important source of intestinal intoxication, the virulence of the ptomaines formed depending not only upon the micro-organisms, but upon the character of the food material in which it is growing.

The products formed during the process of putrefaction are indol, skatol, phenol, cresol, leucin, tyrosin, ammonia and hydrogen sulphide; also volatile fatty acids, oxalic acid, uric acid and the xanthin bodies. The most important of these bodies is indol, varying amounts of which we find in the urine in the form of indican, whose etiological relationship to nervous symptoms has been demonstrated, although the absence of indican does not rule out intestinal intoxication, since severe forms have occurred in which indol was not an etiological factor.

Rachford⁵ thinks that these severe albuminous fermentations are more common in a child than in the adult. He bases his view on the fact that the Hcl. formation of the stomach is not so well developed in the young child, and, therefore, not as capable of exercising the same control in preventing intestinal fermentation; also that the filtering function of the liver is not as well carried out as in the adult.

As an example of the severe nervous symptoms

due to the absorption from the intestinal canal, I would like to quote the following case.

This occurred in a five-year-old Italian child who lived in a very ignorant family under very filthy conditions. The father, who was a market peddler, lost a child two years ago from meningitis. From what information I could obtain, the child was in the habit of eating some of the left-over slightly spoiled fruit. When I first saw him, so profound was the intoxication that it strongly suggested meningitis. He was semi-conscious, being aroused with difficulty. The temperature was 105° F., the respiration increased, as was the pulse, which was full and bounding. Nothing was found in the lungs. His face was flushed, pupils irregular, and responding slowly to light. There was slight rigidity to neck, increased patellar reflexes, marked Kernig's. There was no Babinski or ankle clonus. At times there were quick strong contractions of the muscles of the lower extremities. Rectal examination showed the lower bowel packed full of feces. Lumbar puncture was offered, but the father refused to let it be performed.

This child had been ill three days, the onset being ushered in by vomiting, headache, slight fever and some abdominal pain. The bowels had moved slightly every day. The first day his physician gave him a good cleaning out, with the result of a drop in the temperature and an improvement in all of the symptoms. As soon as the bowels became costive, the temperature went up again, so that at the time I saw him his temperature was 105. The movements now obtained from day to day were very foul, and contained a good deal of mucous. With a continued cleaning out, the nervous symptoms disappeared and he made a good recovery.

In conclusion, while the parent's tale of a "bilious attack" may mean the most innocent of digestive upsets, their diagnosis must be carefully sifted and a thorough physical and clinical examination made and the other possibilities excluded.

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- ² Moynihan: Appendix Dyspepsia, Brit. Med. Jour., Jan. 29, 1910.
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- ⁴ Comby: Arch. de Méd. des Enf., vol. xii, p. 726.
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THE ETIOLOGY OF COMMON COLDS.

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IN an editorial in the JOURNAL of May 26¹ on the "Prevention of Common Colds," it is assumed that this term means an acute bacterial infection of the mucous membrane of the upper respiratory tract. With this assumption I am in sympathy, more perhaps because I think that in case of dispute it is the proper side to take, than because it is absolutely accurate. The term "cold" is a popular rather than a scientific term, and as such means different things to different men. As expressing a pathological condition it has long been abandoned by the medical profession. Its use is still forced upon the family practitioner by his patients, but as the word is no longer orthodox, he can twist its meaning to suit the occasion.

To many the word "cold," at least as far as it

¹ Vol. cxii, p. 718.

applies to the nose, is associated with a group of symptoms commonly called coryza. For instance, we have what is known as "rose cold," which is not a bacterial infection. The question is then one of a better definition of an ancient but still active word, which cannot be eliminated from the intercourse between physician and patient, even if it were desirable to do so.

A similar uncertainty of definition hangs over such words as "rhinitis" and "pharyngitis," which are often used to include not only true inflammation, but any disturbance of function or secretion or sensation which cannot be classified under some more definite pathological heading. With advance of knowledge a constantly increasing proportion of cases are found to be dependent upon some local lesion or definite infection or general condition which makes their classification and description more exact; there still remain, however, a large number of cases in which the etiology is obscure and the local appearances misleading. Among the acute disorders of the nasal chambers we may distinguish some as due to infection and others as arising from a local irritability and vaso-motor disturbance. A type of the first class would be a rhinitis where the infecting organism is known, and of the second the coryza induced in some persons by the pollen of certain plants or by sitting in a draft. In some cases both of these etiological factors may exist, and in many more it may be uncertain or a question of individual opinion whether an infection or some form of local or systemic irritation is the cause of the symptoms.

The more definite processes, such as diphtheria on the one hand and hay fever on the other, are no longer classified as simple acute rhinitis or "cold in the head." Among those that remain it is important to distinguish as far as possible whether we are dealing with an infection or with some systemic or local irritation.

Among the varieties of acute rhinitis or cold, there is one form which it seems to me is so common and constant in its symptoms that it should be classed as a distinct and definite disease. Briefly, the symptoms are as follows: The first suspicion on the part of the patient that he has such a cold starts from an irritation or sensation in some spot, often the nasopharynx, occasionally the larynx, nose or tonsil. During the next few hours this irritation extends to neighboring regions, and this continues perhaps for a few days, but the amount of its extension varies in different cases. It may involve the nose, the sinuses, the pharynx, the larynx, the trachea and the bronchi, rarely the stomach, but it may spare any of these parts. The local appearances are in most cases less marked than the severity of the symptoms would suggest. There is an increase in redness of the mucous membrane involved, and other signs of inflammation, generally of a mild type. In the nose the turbinates become engorged during the symptoms of coryza, and abundant watery secretion is seen. In the pharynx the mucous membrane becomes red, especially about the so-called follicles and the faucial pillars. In the larynx and the trachea there is a distinct reddening of the

mucous membrane, especially in the latter. The vocal cords may or may not escape. But none of these local appearances are really characteristic; the diagnosis must largely be made from the patient's symptoms and history.

This common form of cold runs a more or less definite course. It is generally possible to trace its extension from one region of mucous membrane to another. Although the symptoms connected with it are dependent upon the region involved and the severity of the attack, these symptoms do not suddenly arise and suddenly disappear, as is often the case with vaso-motor rhinitis. It appears to spread between persons in close contact with each other, and with an incubation period of from two to four days. It occurs less frequently in summer than at other times of the year, and is rather more common in children than in adults, although persons vary in the frequency and severity of the attacks. The process is essentially an acute one, the period of extension seldom lasting many days, and all symptoms and appearances sometimes disappearing in a few hours or days. During this period there is seldom any rise in temperature, no formation of pus nor increase in the number of bacteria to be found. In some regions, however, notably the nasal and accessory cavities and the bronchi, there may be a purulent invasion following the acute stage, suggesting the result of local failure of resistance, due perhaps to a disturbance of function of the self-cleansing ciliated mucous membrane. This second or subacute stage is characterized by the formation of mucopurulent secretion containing different micro-organisms, it varies much in severity and length, and may lead the way to serious trouble. During the primary stage there is a varying amount of local and general discomfort depending upon the extent of the trouble and the idiosyncrasies of the patient. When a purulent stage follows, the temperature and the severity of the disease depend upon the locality and extent of the secondary complications and the invading organism.

No specific micro-organism has been found to explain the cause of this most common form of acute cold, but this is equally true of other diseases whose nature is evidently contagious. As the community and even a majority of the medical profession insist on seeking some recent exposure to weather as the cause of each case as it arises, the sometimes obvious contagion is overlooked. The common belief is that the start is given to the process by some chilling of the skin, as a result of imprudence in exposure, or in dress, acting in some way through changes in the body temperature or through the nervous system; or that exposure frequently gives a chance to some pathogenic organism which is waiting for the opportunity. While this latter is perhaps sometimes true in such cases as an already existing bronchitis, I believe that a typical cold never starts in this way.

There is much evidence tending to show that these colds are often directly contagious. If we can prove that a definite pathological process is

often due to contagion, the same process is probably always due to contagion.

It is a matter of common knowledge that epidemics of simple colds may occur. Even more common is the observation that when they appear in a large family of children they go through the family or even a school. Families of children often remain in the country all summer entirely free, but soon after beginning school start a series of colds which spread to other members of the household. If, however, a cold should start in the middle of summer it may, in the same way, go through a family or several families. These cases do not begin all at once, as would be expected if they were due to the weather, but in sequence.

Evidence may be cited also that where no chance for contagion exists this usual form of cold does not arise from exposure. Nansen mentions that on his Polar expedition no one ever had a cold. In the more recent expedition to the Antarctic under Shackleton, Dr. Marshall reports that the only suggestion of colds in the head which occurred was on opening a bundle of blankets, when symptoms of acute rhinitis appeared in the hut, but soon subsided after exercise in the open air, — obviously a vasomotor and not an infectious rhinitis. I have notes of reports of other long voyages where, in spite of exposure, physical weakness and unhealthy surroundings, acute colds did not appear until after the vessel reached port. I have been told by the captain of a whaler that the people in Greenland never have colds except when it is brought by a ship.

My own experience tends to agree with those who have observed that colds have an incubation period of from two to four days, that they remain contagious for several days and that the acquired immunity is short. Also that the disease is carried especially by sneezing, coughing, embracing and speaking at close range, possibly by towels and other utensils, but only for a short time, and that much can be done to prevent its spread by acting along these lines. It spreads more frequently among children because they are in more frequent contact with each other than are adults. To prevent colds a little care given to avoiding close contact will accomplish much more than a great deal given to details of clothing and exposure to weather.

The susceptibility of different persons varies greatly. There would appear to be sometimes either a lack of general resistance to the infection or a local susceptible area. Perhaps the larger amount of lymphoid tissue in the pharynx of children increases their susceptibility. I have not been able to prove that there is any relation between a person's susceptibility to colds in the head and his general health and strength.

In addition to the above-described form of cold, there are other types which, although having some symptoms in common, differ enough to make it probable that, although infectious, they are due to some other organism. These generally run a more prolonged course. They may be accompanied from the start by a purulent secretion and sometimes by rise of temperature. They are, as

a rule, less contagious than the more common form. Epidemics in which acute rhinitis is a prominent symptom are various and not uncommon. It accompanies measles and other constitutional diseases. It may or may not appear in infection by the bacillus of influenza. The micrococcus catarrhalis apparently sometimes causes an epidemic of rhinitis and pharyngitis. In other cases of acute or subacute inflammation the staphylococci, streptococcus, pneumococcus or a diplococcus are probably the primary cause of the disturbance, certainly they are there in large numbers. Some of these organisms are common in healthy throats, and consequently acute attacks caused by them would have to be explained by a lowered resistance and would not appear as an epidemic. But in the more common form of cold the theoretical micro-organism which starts the process and carries the contagion has not yet been proved, and is probably none of these. If we may classify it as contagious we may assume the micro-organism.

The criticism that the personal experience of many, and the common belief of centuries, proves that a common cold is generally the result of exposure may be answered in different ways. Within a comparatively short time the accepted etiology of several diseases has been radically changed, and generally in the direction of assigning a definite cause to a definite disease. In one sense a "cold" is not a definite disease inasmuch as the term may be used to include various symptoms of vasomotor origin. But this is not the kind that is commonly meant when the word "cold" is used. Symptoms of vasomotor origin come on at the time of exposure, and their duration is dependent upon external conditions. They do not run a definite course extending from one region of mucous membrane to another, and they seldom lead to purulent secondary complications.

When we recognize more definitely the common type of infectious cold, and the differences between it and coryza due to vasomotor disturbance, we may classify the latter with hay fever and its kindred, and announce that a "real cold" is a contagious disease. I think that the community would gain much by this assumption. The objection to drafts and wet and cold in moderation which induces humanity to shut itself into airtight inclosures is often due to an unwarrantable fear of "catching" just those diseases which are, in fact, communicated by sneezing, coughing and poor ventilation.

RED CROSS MINE WORK. — The American National Red Cross plans to introduce in the bituminous mining districts the first aid to the injured system which has been in use for several years in Pennsylvania. The Pullman Car Company has donated a car in which visits will be made to the mines throughout the country, and instruction will be given to employers and employees in the most approved first-aid methods. The railroads over which the car will travel have, with the sanction of the Interstate Commerce Commission, agreed to furnish free transportation, and it is expected that the work will be begun during the latter part of the month under the supervision of Dr. M. J. Shields. — *Med. Record*.