

the milk indirectly through the privy contents, which by means of flies or the feet of the chickens or in any other way reached the milk cans or the water supply, it is still readily conceivable that a number of contaminations of the milk with the excreta might have occurred during the several years previous without causing infection. The contamination of the milk with typhoid bacilli once having occurred, it is readily conceivable that the infection could survive on the dairy utensils, and so more or less constantly infect the milk for some days or even weeks.

#### SUMMING UP OF EVIDENCE THAT THE OUTBREAK WAS CAUSED BY INFECTION IN MILK

1. There was a sudden onset of a disproportionately large number of cases among the customers of the two dairymen supplying the suspected milk.
2. A typhoid bacillus-carrier was discovered among the persons handling the milk on the only dairy farm supplying both dairymen with milk.
3. There was no occurrence of any unusual number of cases among persons living in the same sections of the city as those affected but receiving milk from other sources.
4. There was no occurrence of an unusual number of cases in sections of the city other than those supplied with the suspected milk.
5. Most of the cases occurred among well-to-do persons, and among those who used milk freely, women and children principally being affected. Thus of the 54 patients there were, among those who used milk as a beverage, 30 cases; among those who used it on fruits and cereals freely 20, among those who used it in coffee only 2, and of those who used it as ice cream only 2. There were 15 instances in which the members of the household who used milk freely were affected, while those who used none or used it more sparingly, escaped.
6. Many of the cases had a sudden onset of definite symptoms without recognizable prodromes, and many ran a mild course.
7. All other known possible factors were eliminated as cause common to any considerable number of the cases.
8. The outbreak suddenly ceased ten days after the suspected milk supply was shut off, although all the other suggested possible factors continued, so far as could be learned, about as they were before and during the outbreak.

#### LESSONS TAUGHT BY OUTBREAK

Had dairymen A and B pasteurized their supply of milk before delivering it to their customers, the infection in the milk received from the dairy farm would have been destroyed and this outbreak of typhoid fever would not have occurred.

Had the sanitary arrangements been perfect on the farm of Mrs. X, and had much greater care been exercised there in handling the milk, the infection might not have reached the milk.

The possibility that there may be typhoid bacillus-carriers among persons handling milk, and the liability that these carriers may get infected excreta on their hands from time to time, should be considered in determining if any degree of cleanliness less than absolute surgical cleanliness would be sufficient to safeguard milk from infection.

To enforce officially such extreme care in the handling of the milk supply of a large city would be a difficult, if

not an impracticable task, while official supervision of the pasteurization of the milk supply of a large city, if done at distributing depots, would be entirely practicable, much less expensive, and a more nearly certain safeguard against infection.

#### THE RATE OF COOLING OF SEVERAL POULTICE MASSES \*

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The value of poultices for most purposes being proportional to their retention of heat, it appeared desirable to compare the rate of cooling of several poultice masses. A comparison of the easily prepared linseed poultice and the official clay poultice, cataplasma kaolini, seemed particularly desirable and these were controlled most carefully.

Experiments with small quantities in large test-tubes proved unsatisfactory, and the following disposition, suggested by Dr. Söllmann, was finally adopted:

The poultice masses were placed in bottles measuring 6 by 14 cm. to a depth of 9.5 cm. A thermometer was supported in each bottle by a cork. The bulb of the thermometer was adjusted 2.5 cm. from the bottom and 2.75 cm. from the sides. The bottle of cataplasma kaolin was heated in a boiling water bath and when a temperature of 70 to 80 degrees C. was reached the bottle of freshly-prepared hot linseed poultice mass (one part of ground linseed added to two and one-half parts of boiling water) was placed in the same bath. When the mixtures attained a fairly constant temperature, 94 to 98 degrees, they were transferred to a second large but shallow water bath, 2 to 2.5 cm. in depth, kept at 37 to 40 degrees C. The parts of the bottles above the level of the water were wrapped in cotton. This arrangement was thought to approach as nearly as possible the conditions of the poultices when applied to the body. The temperatures were recorded at ten-minute intervals until the temperature of the bath was reached. Three sets of experiments were made, two bottles of each specimen being used in each experiment. Between 85 and 95 degrees the linseed mixture swelled considerably, forcing a small quantity from the bottle, which had to be removed in order that the thermometer might be accurately placed. When the mass cooled a depression was left in the center, which brought the thermometer bulb nearer the surface than in the other mixtures and might have caused an apparent increase of the rate of cooling of the linseed mass.

In another set of experiments the difference in the rate of cooling at the surface and at the center was observed by placing two thermometers in jars measuring 18 by 17 cm. A central thermometer, as in the previous experiment, was placed with the bulb 2.5 cm. from the bottom and equidistant (2.75 cm.) from the sides, and a second, or "outer" thermometer 1.25 cm. from the sides of the jar. The mixtures in the bottles were 8 cm. in depth.

As the two thermometers ran practically parallel with a difference of but 1 or 2 degrees, these experiments, five in all, are classed with the previous experiments.

The results were plotted in curves in which the

\* From the Pharmacological Laboratory of Western Reserve University.

\* Read in the Section on Pharmacology and Therapeutics of the American Medical Association, at the Fifty-ninth Annual Session held at Chicago, June, 1908.

abscissæ represent the time in minutes and the ordinates the temperatures in degrees C. The curves agree quite closely and are combined as in the illustration, Figure 1. During the first twenty minutes, down to 75 degrees, the temperatures ran fairly parallel; then the temperature of the linseed mixture remained about

though somewhat higher and from 2 to 8 degrees higher than that of the clay poultice; the petrolatum and water curves were practically the same as that of the cataplasma kaolini, the petrolatum a little above and the water a little below that of the kaolini mixture (Figs. 2 and 3).

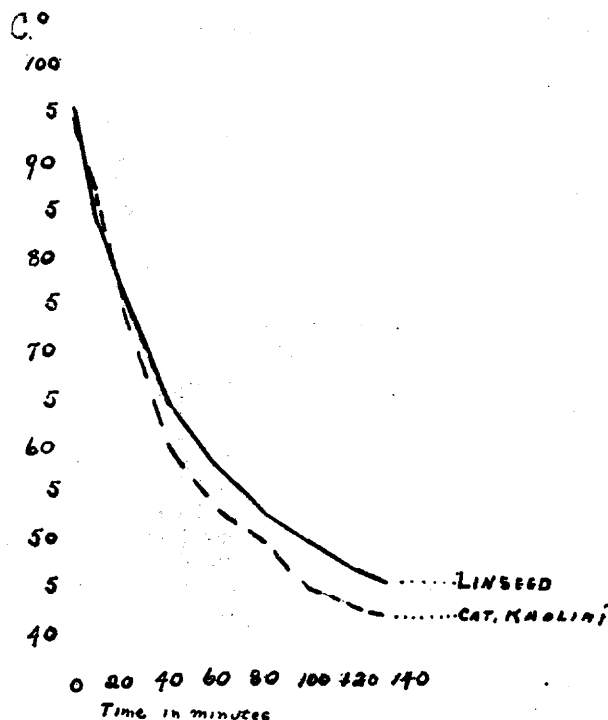


Fig. 1.—Curves showing rate of cooling of linseed poultices and cataplasma kaolini; composite of eight experiments.

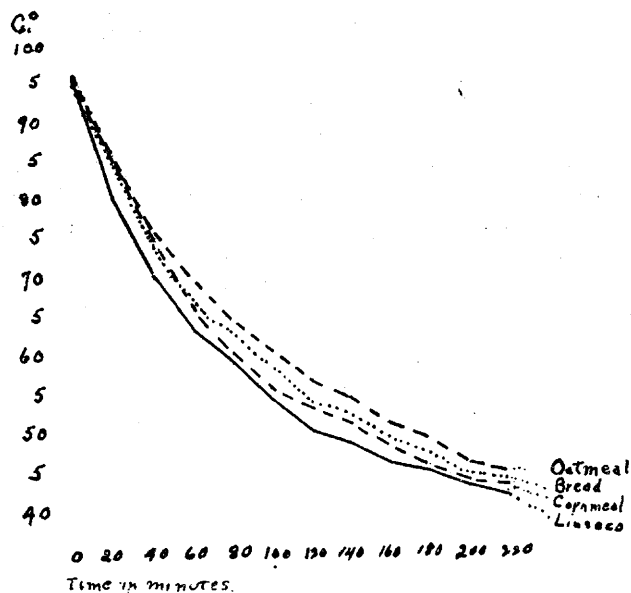


Fig. 2.—Curves showing rate of cooling of oatmeal, bread, cornmeal and linseed poultices; composite of three experiments.

5 degrees above that of the cataplasma kaolini until the close of the experiment.

For purposes of comparison a set of three experiments were made with other poultice materials, oatmeal, cornmeal and bread, and water and petrolatum also. The mixtures were made of the same consistency as the linseed mixture. The poultice masses formed a temperature curve similar to that of the linseed poultice,

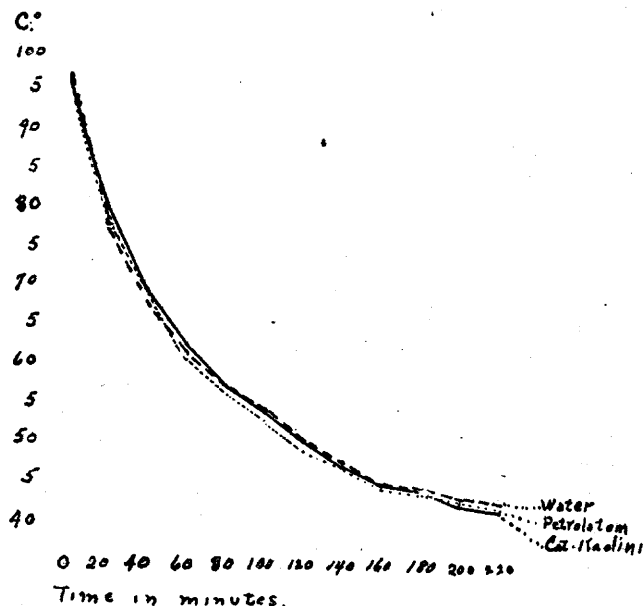


Fig. 3.—Curves showing rate of cooling of water, petrolatum and cataplasma kaolini; composite of three experiments.

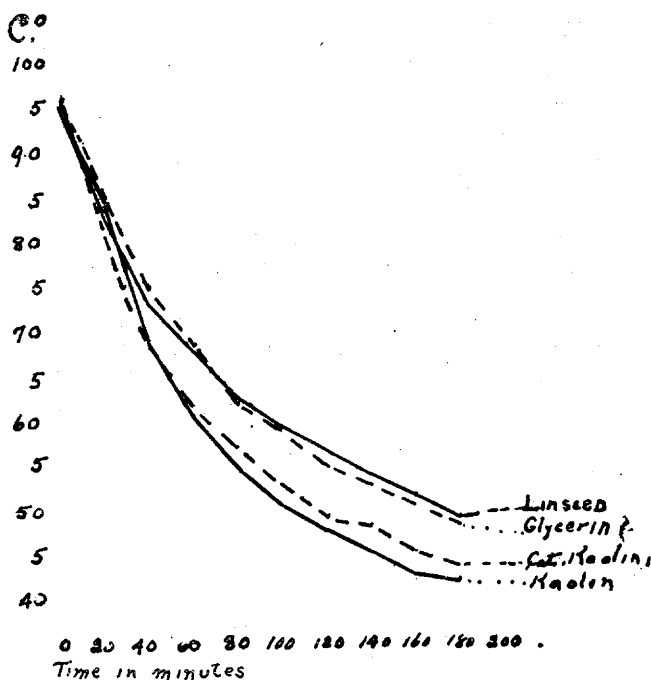


Fig. 4.—Curves showing rate of cooling of linseed poultices, glycerin, cataplasma kaolini and kaolin; composite of two experiments.

To determine if possible the reason for the more rapid cooling of the cataplasma kaolini two experiments were made comparing its chief constituents, glycerin and kaolin (clay) with the official mixture and with the linseed poultice mass. The curves of the linseed mass and the glycerin are practically the same, while that of the kaolin falls somewhat below the clay poultice curves (Fig. 4).

## CONCLUSIONS

While the rate of cooling is not conspicuously different for the cataplasma kaolini and the linseed poultice mass, the difference is constantly in favor of the linseed poultice mass.

Dry kaolin cools appreciably faster than the cataplasma, while glycerin cools considerably more slowly.

Other poultice masses, viz., oatmeal, bread and cornmeal, apparently retain their heat even somewhat better than the linseed mass; on the other hand, water cools at about the same rate as cataplasma kaolini and petrolatum a trifle faster.

## THE SYMPTOMATOLOGY OF PROSTATITIS \*

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The classical symptoms of acute prostatitis are so apparent in every case that I mention them at this time merely by way of contrast to the more varied and protean manifestations of the chronic form. With the exception of rare cases of metastases in acute infections and injury of either the prostatic urethra or the gland itself, our attention in nearly all cases of acute prostatitis is immediately attracted to the cause of the disease, viz.: an acute or subacute gonorrhea. Associated with this we observe the frequent painful passage of a small, feebly ejected stream of urine, often followed by terminal hematuria and leading occasionally to complete retention. Digital exploration per rectum reveals a large, boggy, sensitive prostate many times the normal size, producing painful defecation, painful erections and deep-seated perineal pain. All these signs are so unmistakable that a diagnosis of acute prostatitis is readily made.

Chronic prostatitis, however, presents a very different picture. In order to arrive intelligently and correctly at the diagnosis of a malady whose manifestations are so varied and at times obscure, it is necessary to have a classification of the symptoms that can be followed as a routine measure. Otherwise we often miss important details. Taylor,<sup>1</sup> of New York, divides the symptoms into two classes: first, those observed in patients mostly under 30 years of age, and second, those observed in older patients. This classification is not without value, for the multifarious symptoms of sexual neurasthenia are usually most pronounced in the younger subjects, while in the older patients the urinary and referred type of symptoms, as a rule, predominate. The preponderance of nervous symptoms in many cases has led Peyer† to classify three neuroses of the prostate as follows:

1. General hyperesthesia of the prostate.
2. Hyperesthesia of the prostatic urethra.
3. Irritability of the neck of the bladder.

On the whole, however, I think that the classification of symptoms as suggested by Young,<sup>2</sup> of Baltimore, is the more comprehensive and is suitable to all cases. Young divides the symptoms into: 1, urinary; 2, sexual, and, 3, referred.

## URINARY SYMPTOMS

The urinary symptoms may be manifested by frequency, often more noticeable at night than during the day; pain at the beginning, during, or at the end of urination; slow or difficult urination; hesitation in starting the stream; urgency and dribbling at the end of urination. These symptoms depend on the hypersensibility of the terminal nerve filaments supplying the prostate, the prostatic urethra, and the neck of the bladder. And as a result the sensory stimuli are produced in such an excess above the normal that there is a lack of coordination in that apparently simple and yet exceedingly complex act of urination, the phenomena of which we must agree with Casper,<sup>3</sup> that we do not yet fully understand.

As an illustration of the urinary symptoms the following case is reported:

**CASE 1.—Patient.**—M. R., aged 30, general health good, not anemic or neurasthenic; has never had gonorrhea, and urine does not show any abnormality. About three years ago he began to notice some frequency of urination, and since that time had to get up two or three times every night, and has also had some frequency during the day.

**Examination.**—This revealed a very sensitive prostate, slightly enlarged and nodular. Prostatic secretion showed numerous pus cells, but otherwise normal elements. Examination showed the urethra to be normal except that the prostatic urethra is excessively sensitive.

That the frequency of urination in this case was due to the chronic prostatitis was shown by the relief of that symptom under appropriate treatment.

## SEXUAL SYMPTOMS

The sexual symptoms are usually manifested first by disturbing and often painful erections due to a condition of erethism, which after a time is followed by diminished vigor with imperfect erections, premature ejaculation, frequent nocturnal emissions, etc. These patients are usually neurasthenic. The basis for these symptoms lies in the pathologic condition which is the result of chronic inflammatory changes affecting the terminal filaments of the pudic nerve in the prostate. The phenomena of erection is not fully understood, but experiments on dogs have shown that section of the pudic nerve completely abolishes it.

The following case illustrates this class of symptoms:

**CASE 2.—Patient.**—B. W., aged 35, general health excellent and physically very strong, expression indicating strong force of character. He had gonorrhea five years ago. The attack was not very severe and the patient had no complications, but never got entirely well. He noticed intermittent discharge and had some discomfort in the perineum. Finally he began to notice premature ejaculations and gradually the erections became weaker and more imperfect until he was practically impotent. Worry over his impotency eventually produced a deplorable condition of neurasthenia. He tried all sorts of treatment, even the suggestion treatment, but the suggestions did not reach the prostate.

**Examination.**—This showed urine, first glass cloudy and containing shreds, second and third glasses fairly clear. Occasionally the urine was very cloudy with phosphates. The prostate was only slightly enlarged, but very sensitive, not distinctly nodular, but slightly indurated in region near the seminal vesicles. The seminal vesicles were palpable, but not indurated. The prostatic secretion showed pus cells in considerable numbers, but otherwise normal elements. The urethra was excessively sensitive, especially in the prostatic portion.

A few months of local treatment by vigorous massage, irrigations, sounds up to 33 F., application of nitrate of silver

3. Casper: Genitourinary Diseases, 1906.

\* Read before the Southern Medical Association, Atlanta, Ga., November, 1908.

1. Taylor: Genitourinary Diseases, 1906.

† King, A. F.: Washington Med. Ann., 1907, p. 101.

2. Young, Geraghty and Stevens: Johns Hopkins Hosp. Rep., 1906, xiii.