Typhoid Fever Disseminated Through the Milk Supply.*

The relation of milk to the spread of infectious diseases has been most strikingly shown in an epidemic of typhoid fever that occurred at Stamford, Conn., during this year, the official report of which has been recently issued by Professor H. E. Smith. The evidence gathered shows beyond all question that the disease was propagated by means of the milk supply, so that the epidemic possesses unusual interest for students in bacteriology and hygiene.

The epidemic broke out in April, and within six weeks 386 cases were reported in a town of about 16,000 inhabitants. Of this number, 65 cases or 16·8 per cent were five years old or under, while over one-third of the total number were under ten years of age.

The mortality statistics of the State of Connecticut for the last 15 years show that less than 10 per cent of the total number of deaths from typhoid have been under 10 years of age. In view of this, the large number of cases in early childhood has a peculiar significance in explaining the origin of the epidemic, as the infection of the milk supply would be more apt to manifest itself in infants than in adults. As soon as the milk supply was suspected, its sale was prohibited, and in fifteen days (about the usual period of incubation of this disease) after this prohibition went into effect the number of new cases dropped from an average of over ten a day to less than two. It was further shown that out of the total number of 386 cases, 352 or 91·2 per cent lived in families that were supplied with milk from the same dealer. In 14 other cases milk from this same dealer was consumed by parties at a cafe and bakery. In 8 of the remaining cases milk was supplied the parties by the producer from whom the milk peddler obtained his supply. This makes a total of 97·1 per cent of all cases that received the milk, either directly from the producer or indirectly through the milk dealer who peddled the milk. As the milkman in question only supplied about 9 per cent of the total amount used in the town, the number of cases that developed on his route is of especial interest.

The evidence of a contaminated milk supply was overwhelming, but how to account for the infection of the milk was not so easy. The milk might have become infected in the hands of either the dealer or the producer. Inasmuch as a few cases of the epidemic developed that were not supplied with milk from the dealer, but were supplied by other parties that had been using some of the milk cans in common with him, the presumption was strongly in favor of the view that the infection occurred while the milk was in the hands of the dealer. It seems that the dealer was in the habit of washing out his cans himself, and while he obtained most of his supply from the producer in question, at times he secured an extra supply from other parties. No particular attention was paid to the cans that were used, so that they were often mixed up and returned to different parties after they had been cleaned by the dealer.

No case of typhoid had occurred at the house of either the dealer or the producer, so that direct infection of the milk did not seem probable. An examination of the water supply was then made. At both places shallow wells were found, that of the milk dealer's being only thirteen feet deep with nearly twelve feet of water in it. The well was surrounded on several sides by privies, an extremely foul one being within twenty-five feet of the well. It was the habit of the dealer to first rinse out the milk cans with water from this well, then they were thoroughly cleansed with hot water and soda, and finally rinsed in cold water again that was taken from this well.

Both the bacteriological and chemical examination of water from the two wells was made.

Neither of the wells was good, and that of the milk dealer was grossly contaminated, having nearly 70,000 germs per cubic centimeter.

Typhoid bacteria were not discovered, but this is not surprising. It is possible that the privy near the well may have been used by some unknown person, as it was close to and easily accessible from a railroad. There is no positive evidence, however, that the water was contaminated except in the history of the epidemic. The evidence, however, is so strong that there can be no valid objection to the conclusion that milk was infected by washing the cans with contaminated water.

H. L. RUSSELL.

* From Science.

Torpedo Boat Practice at Newport, R. I.

Rules were arranged similar to those which have governed the drill between the torpedo station and the Cushing, except that Lieut. Smith promised not to take shelter behind any obstructions within 2,000 yards—one sea mile—despite the fact that the battleship Maine has four searchlights and should consequently be impregnable against a torpedo attack, if there is such a possibility with a reliance on searchlights alone, without other scouts.

The officers of the ship thought they were sure of success in such an attack, and in a harbor where they had but four narrow channels to sweep and a searchlight to each. But they were doomed to disappointment, as the torpedo boat had an easy task.

November 22.—The Cushing ran out to the ship in mid-harbor under running lights. After a brief conference these lights were hidden, and the Cushing sped off toward the channel. The searchlights swept the waters, but the boat was not to be seen. She had doubled her tracks, passed within 1,500 yards of the ship, and run out to sea. Then she glided up the channel, close under the Fort Adams shore, and then laid out a direct course for the ship. She was discovered only when within twenty seconds of torpedoing distance, and before all the lights could be trained upon her, to say nothing of an effective battery, she had discharged all three of her rockets. When the allotted two minutes had expired after her discovery she was alongside the ship. The second attack, while differing in method, was equally successful for the Cushing.

RECENTLY PATENTED INVENTIONS.

Agricultural.

PLANTER.—Anders Matson, Moline, Ill. This is especially a corn planter, automatically dropping corn at regular intervals, and the mechanism being adjustable to drop the corn in drills, one seed or as many as may be desired at a time. The markers are adjustable to large or small planting wheels, one marker marking the field one row in advance, and the marker on the opposite side of the machine traveling in the row previously marked, enabling the driver to readily see how to drive to plant the corn equal distances apart.

Electrical.

ELECTRIC DESK LAMP.—William H. Sheppard, New York City. This is an incandescent lamp admitting of three adjustments to shed light in different directions, having two swinging bracket arms in hollow trunnions projecting from the socket, the arms being revoluble to change the position of the light, while a cylindrical shade or drum may be revolved to alter the position of the light opening, the size of which may be adjusted by the drawing out, more or less, of a shutter. By means of a single key the current may be sent into either one or both of the lamps.

Miscellaneous.

FARE REGISTER.—Walter D. Campbell, Buenos Ayres, Argentine Republic. To insure the co-operation of passengers in observing the registering of the fares by the conductor, this invention provides an accurately registering mechanism in connection with a plainly visible dial, but the registering mechanism is so arranged that, after a certain number of fares has been registered, a prize or premium ticket will be thrown out, as, for instance, a small percentage of all the fares, the prize ticket becoming the property of the passenger paying the last fare.

WRAPPING PAPER PRINTING.—Byron J. Churchill, Morris, N. Y. To print upon rolls or spools of paper as it is drawn off for wrapping up parcels in stores, this inventor has devised a paper-supporting frame with which is combined a pivotally connected yoke and casing carrying an inking roller and a printing roller, the latter always remaining in contact with the paper and being rotated by frictional contact therewith, while springs keep the inking roller in contact with the printing roller.

THILL COUPLING.—Peter Bold, Woodbourne, N. Y. This is an improvement in couplings in which the opposite trunnions of the thill are received in sockets carried by clip plates, and provides, by a novel construction of the clip and plates, for holding the upper clip plate rigid against the under side of the axle, the lower clip plate moving on the upper clip plate to effect the proper adjustment, and thus preventing the scratching or marring of the axle, which is frequently caused where both plates have movement.

PUMP.—Dudley L. Smith and Frank E. Womer, Fairhaven, Wash. This is a pump more especially designed for raising impure water containing gravel, stones, etc., and the invention provides for a chamber connected with the pump cylinder and the suction pipe, and by a drop or downward bend with the discharge pipe, inclined hinge valves controlling the inflow and outflow to and from the chamber.

EAVES TROUGH PROTECTOR.—Marcellus M. Hitt, Luray, Va. To prevent birds from building their nests over the trough, and also keep the droppings of birds, leaves, and other trash out of the trough, this inventor has devised a protector whose body is composed of bent wire gauze having in its edges projecting rods and holders provided with hooks for attaching the protector to the trough. The protector can be adjusted to give it the same inclination as the roof.

BOOT OR SHOE HOLDING STAND.—Richard Lundqvist, Laguna de Terminos, Mexico. For conveniently cleaning, blacking, polishing, or otherwise treating a boot or shoe, this inventor has devised a stand for holding the boot or shoe in the best position. The stand comprises a suitable base on which is a post having near its middle a box for brushes, etc., and on the top of the post is a rest similar to a foot, the shoe being engaged by a last and held in position on the rest by a curved spring-pressed lever. The last does not need to fit very snugly, and the two or three sizes required may be kept in the brush box.

BATHING FORM.—Kate Hatch, Brooklyn, N. Y. For the use of ladies while bathing in the surf or other place, to protect and shield the upper front part of the body, this inventor has devised a form comprising a front made of a single piece of rubber or other flexible material, adapted to fit snugly and conform to the upper part of the wearer's body. The front has bust-supporting pockets, and at its upper end are shoulder straps adapted to hook upon rear extensions at the sides of the front. There are also side straps which pass under the wearer's arms, crossing the back, to be attached to hooks on the sides of the front, and back straps. Each of the straps is adapted to be drawn and held sufficiently tight to conveniently support the form on the wearer's body.

BEDSTEAD BRACKET.—Henry G. Traeger, Portersville, Cal. This invention provides a bracket, preferably made of cast metal, for convenient attachment to the inner corners of bed posts, on which the bracket is readily adjustable vertically, it being designed to receive one corner of the bed spring, mattress, etc., and for use in lieu of slats, dispensing with the racks commonly provided on the side pieces of bedsteads and affording a much more cleanly and desirable article of furniture.

NECK YOKE.—John B. Lockwood, Helena, Montana. This device has an eye adapted to receive the vehicle pole, there being pivoted to the eye the lower end of a clamping bar with a cam surface engaging the pole, while a sleeve receiving the yoke has lugs pivoted to the upper end of the clamping bar. The harder the pull in a forward direction on the neck yoke, the tighter the clamping bar will be engaged with the top of the pole, which is positively prevented from becoming accidentally detached and dropping to the ground.

TRAP.—Job T. Wells, Candо, North Dakota. To catch small animals or birds, this inventor has devised a bait-alluring device in which the cage has at one end a transverse passage with normally open ends, a hinged gate at each end of the passage, and spring mechanism to release the gates upon the entry of a victim.

NOTE.—Copies of any of the above patents will be furnished by Munn & Co., for 25 cents each. Please send name of the patentee, title of invention, and date of this paper.

NEW BOOKS AND PUBLICATIONS.

UNITED STATES COMMISSION OF FISH AND FISHERIES. Part XIX. Report of the Commission for the year ending June 30, 1893. Washington. 1895. 8vo, pp. 142.

ECONOMIC MINING. A practical handbook for the miner, the metallurgist, and the merchant. By C. G. Warnford Locke. London: E. & F. N. Spon. New York: Spon & Chamberlain. 1895. Pp. 668. 8vo. 175 illustrations. Price $5.

Notwithstanding the fairly abundant mining literature, there is no room for doubt that a book founded on the lines of this volume will supply a long felt want. The reason for this is, that by the rigid exclusion of matters having only an academic or historic interest, the space is afforded for dealing with just those points which are, perhaps, not of strictly scientific value, but which have, nevertheless, a high economic importance, and go far toward determining the profitable or unprofitable result of an undertaking. As mining and metallurgy are industrial pursuits, followed with a view of financial gain, the economic aspect is quite as deserving of study as the highly controversial questions regarding the history of strata, etc. Accepting the beds and lodes and veins as accomplished facts, the book endeavors to describe in plain language and with a practical aim how these deposits will best be worked under the various conditions encountered, and how the valuable portions of their contents can most cheaply and effectively be separated and prepared as marketable commodities. This is a most excellent book, and the author has acted very wisely in excluding the old processes, which are now interesting only from an historical point of view.

AMERICAN WOODS. By Romeyn B. Hough, author and publisher. Lowville, N. Y. 1893. 8vo. Pp. 79. Illustrated, 75 samples of wood, portfolio, in cloth case. Price $5.

American Woods is a publication in book form illustrated by neatly arranged sections of wood, which have been sliced by an ingenious machine. It is issued in parts, like the above, which is Part I, each representing twenty-five species by seventy-five or more authentic and beautifully prepared specimens showing transverse, radial and tangential views of the grain. The design of this work is to show in as compact and perfect manner as possible the beauty and characteristic structure of the various timbers of our North American forests. The thin slices measure 2 by 5 inches and exhibit the grain in all aspects. They are so thin as to admit light through them. (The author also prepares lantern slides of wood, which prove very useful in teaching.) Each section is securely mounted in a cardboard frame of a purple black color, bearing the scientific or botanical name, in the English, German, French and Spanish languages. A single frame contains only the set of three sections of a single species. With these frames, which are separate, not bound together—so as to admit of being examined singly or arranged in a window—is a pamphlet of text giving full information containing the various species represented. The author has been very careful about the identification of each tree selected for the specimen; hence he can vouch for the authenticity of every specimen represented. Mr. Hough had charge of the remarkable New York State Forestry Exhibit at the Columbian Exposition. The work is also supplied in other bindings and the specimens of wood or the text may be purchased singly. The author also prepares wooden cross section cards which are a novelty. The science of botany is apt to make a very dry study, but it could easily be rendered more interesting by a collection of these woods.

ANNUAL REPORT OF THE STATE GEOLOGIST FOR THE YEAR 1894. By John C. Smock, State Geologist. Trenton, N. J. 1895. 8vo. Pp. 304. Plates, maps.