

What Medicine Knows Today

SMALLPOX AND VACCINATION.

This and the other articles to appear in this series have been prepared by specialists and medical men of high reputation. Each contributor stands high in his field. Professional ethics prohibit them from attaching their names; but every statement is made with the highest authority.

It is just 210 years since Edward Jenner, the great English physician, vaccinated James Phipps, his first patient. During that long period, according to reliable statisticians, more than four billion of human beings have been vaccinated.

When Jenner scraped the arm of the immortal Phipps, smallpox was the king scourge of humanity. Every year more than 250,000 persons died from it in Europe alone. Today it is growing rarer and rarer among all the civilized races of the earth, and in some countries it has disappeared almost entirely. Arm scraping alone is to be thanked for this.

The gentlemen learned in pathology know a great deal less about smallpox than they know about most other infectious diseases. For one thing they have been unable, as yet, to find the germ that causes it. Various minute bodies have been discovered in the blood and tissues of smallpox patients. Each of these has its school of partisans, who produce a great show of evidence that it, and it alone, produces the disease. But here is a unanimous lack of unanimity among the experts. Their various theories still remain to be demonstrated and accepted.

Despite these lamentable differences there is one point on which all the doctors agree. It is this: When a man has once had smallpox, his chances of getting it again are infinitesimally small. In other words, the disease leaves almost perfect immunity behind it; and he who bears its scars may laugh at it for the rest of his life. This immunity follows a very mild attack just as certainly as it follows a severe attack. On that fact is based the theory of vaccination.

Jenner was not the inventor of inoculation. Five hundred years ago the people of the Levant practiced it with success. Long experience had taught them that if smallpox were acquired by bringing the scabs of patients into contact with the skin, it usually appeared in a comparatively mild form. Therefore they immunized themselves in this manner; by direct inoculation from human subjects.

But this method was open to several very grave objections. In the first place, it happened sometimes that a person thus inoculated, instead of developing a mild attack of smallpox, developed it in a virulent form and died from it. In the second place, patients thus inoculated, usually themselves got well quickly and easily, frequently gave rise to the disease in virulent and fatal forms in those around them.

Thus the problem before Jenner was to evolve a method of inoculation that would invariably produce a mild form of the disease and to keep those who had been inoculated from transmitting it, in worse forms, to others. He solved his problem by the use of scabs from human patients and by employing in their places scabs from cows suffering from cowpox.

Jenner died believing that cowpox and smallpox were separate and distinct diseases. Modern pathology has proved that they are one. The difference between their symptoms and effects is due to the fact that cattle possess a certain measure of natural immunity to the smallpox germ, and when it is introduced into their bodies it is strenuously fought and materially debilitated.

Thus if a healthy calf is inoculated with virus from a man dying from smallpox, the calf will not die, but battles with the germs and eventually throws them off. Now, if some of these germs are taken from a scab on this calf and introduced into the body of another calf, the latter combats them still more vigorously and successfully, and they grow still more debilitated. After a number of such transmissions, they lose their original virulence almost entirely. Then, if they are introduced into the body of a human being, they will give him, not the horrible and fatal disease we call smallpox, but the mild and easily cured malady we call cowpox.

At bottom smallpox and cowpox are identical. The only difference between them is that the former is dangerous, while the latter is not. There are many proofs of this; but most of them involve so many technicalities that they cannot be discussed here. The one that best appeals to laymen is the fact that cowpox leaves behind it immunity which is almost as effective a bar to smallpox as an attack of smallpox itself. Experience shows that the immunity produced by any disease applies to that disease alone. In other words, it is against all experience that one malady should protect a patient against some other malady. Therefore, pathologists conclude that smallpox and cowpox are one.

When you are vaccinated, a couple of hundred thousand weak and debilitated smallpox germs, from some calf whose blood has fought them, are introduced into your body. At the place of entrance a pusule forms, and for several days you feel ill. Later on you recover entirely. After that, even if virulent smallpox germs are introduced into your body, you do not take the disease. In a word, you have had cowpox and it has made you immune to its other self, smallpox.

It is a mistake, however, to suppose that this immunity lasts forever; that one vaccination is enough for a lifetime. As a matter of fact, the effect gradually wears off; and all the authorities agree that every one should be re-vaccinated every ten years or so. In Germany this idea is embodied in the imperial vaccination law. Every German child must be vaccinated during the calendar year of its birth and again at the age of 12 years. In addition, whenever a case of smallpox appears, every person in the area of possible infection must be vaccinated again. On account of this drastic law, smallpox seldom rages in Germany, and when it does it remains confined to a relatively small district.

In the United States vaccination is compulsory in the majority of states, but nevertheless the mistaken anti-vaccination sentiment, in many sections is strong, and very often the arm-scraping doctors have to call in the police to make the opponents of inoculation back their arms. Despite this opposition, very few escape. In consequence smallpox no longer is an epidemic in this country.

Once on a time the seacoast cities were ravaged by epidemics that killed thousands. But today the disease kills no more than 3,500 persons a year in the whole country, and the great majority of these are negro or foreign-born dwellers in filthy labor-camps,

sailors' boarding houses or remote, backwoods settlements. Among the civilized inhabitants of the larger cities a case of smallpox is very rare.

The anti-vaccinationists' chief argument is that fact that, if vaccination is performed under the most aseptic precautions, there is danger of inoculating the patient with the germs of other diseases—such, for instance, as lockjaw. That this is true cannot be denied; but that such chance infections occur very often is not likely. Vaccines are now prepared and packed in a thoroughly aseptic manner and all but a small minority of physicians make the inoculation carefully. To avoid all danger of chance infection it is only necessary to employ a competent physician.

The vaccine virus usually is prepared at present by rubbing down scabs from an inoculated calf in chemically pure glycerine. The result is a thick emulsion that keeps well and is easily introduced into the abrasion made upon the arm. By another process, the ends of ivory points are covered with the virus which dries upon them. These points are rubbed into the wound.

In the laboratories wherein vaccine virus is made commercially, elaborate cleanliness is observed. Calves a year or so old are selected. Skilled veterinarians make sure that they are absolutely free from disease. The flank of each animal is shaved and cleaned with antiseptics. Lymph from an infected calf is introduced beneath the skin, either with a syringe or by rubbing it into long scratches. Within a week the whole flank of the animal is covered with cowpox vesicles. The fluid within these is the vaccine virus.

Ordinarily it is squeezed out with forceps or scooped over with appropriate instrument and mixed with glycerine. The mixture is then stored in a cool place for six weeks or two months, when it is ready for use. Glycerinated lymph retains its potency for eight months or more. Besides preserving the virus the glycerine has the effect of killing a number of other common bacteria.

The lymph collected from a single calf is sufficient to inoculate from 2,000 to 15,000 human beings. As the animal's attack of cowpox makes it immune to the disease, in future, it can be employed only once for the production of virus. While it is in service, the animal is usually protected against lockjaw by the inoculation of tetanus antitoxin.

It is important to repeat vaccination when it does not "take." Only when the familiar swelling and malaise fail to follow two or three inoculations is it safe to assume that the patient is immune. That certain persons are naturally immune to smallpox, and that, in consequence, vaccination, in their case, never "takes," is possible; but it is unlikely that such persons are numerous. In fact, one investigator found only one natural immune among 28,000 patients.

A great many pathologists, in all parts of the world, are now seeking the smallpox germ, as has been said so far their work has been without result. Several observers have found a minute parasite—a parasite differs from a bacillus in the fact that the former is a true animal while the latter is a plant. In the pustules of smallpox patients, but the relation of this parasite to the disease remains to be demonstrated.

Other observers have found that the blood of persons recovering from smallpox has the power of making vaccine virus inert, and in this fact lies a possibility that a curative serum for smallpox may be produced before long; but so far it is only a possibility.

Meanwhile there is ground for congratulation in the fact that vaccination has robbed the disease of its old terrors and that epidemics, in civilized countries, now are well nigh unknown. Before vaccination was generally practiced smallpox was a frightful scourge. During the eighteenth century one-third of all the inhabitants of England were pock-marked. In one year, during the early part of that century one-fourteenth of the English people died of the malady. In Japan, before the country was opened to civilization, it was not uncommon for 250,000 deaths to be recorded in a single year. Today, the Japanese doctors have it well in hand, and except in the seaports it is practically unknown.

The disease is thought to have originated in the far east shortly before the beginning of the Christian era. It was introduced into Europe by a Roman army returning from an Asian campaign. The first treatise on smallpox that we know today was written by Marius, a Swiss savant, in the year 570 A. D. Soon after that it became epidemic in France and devastated the kingdom of Toulouse. It also spread along the Mediterranean and the Arab physicians of the time—who were a great deal more expert than their white brothers—made elaborate studies of it. By the time the Crusades it was the king scourge of Europe, and according to one historian, it sometimes caused a million deaths in a single year.

The Spaniards brought smallpox to the new world in 1519. Two years later it killed 3,500,000 of the aboriginal inhabitants of Mexico. The Indians of what is now the United States also fell in multitudes. The epidemic spread to Alaska and thence into Siberia. It did not reach the Hawaiian Islands until 1825; but within a year after that it had laid low 8 per cent of the people.

So far the strict British quarantine has served to prevent an epidemic in Australia; and in view of the extensive vaccination practiced there it is probable that the island continent never will suffer greatly from the malady.

When Jenner introduced vaccination it was opposed on the ground that the virus from calves would make those who were vaccinated bellow like cattle. The theologians of the time also combated him on the ground that smallpox was a punishment laid on the human race for its admitted sins, and that any effort to escape it was an insult to the deity. Happily for mankind, such a view of things is no longer held by civilized white men.

Covers of excellent materials. Prices \$1.00 to \$6.00 for staple numbers, with fancies ranging up to \$15.00.

Preliminary showing of autumn millinery.

A very pleasing display of late Parisian conceptions reflecting the proper styles for early fall will be seen now in our millinery section. These pretty creations reveal more of the artists' clever versatility than usual—the styles are more pronounced, maintaining the subtle air of exclusiveness that is always remarkable in the Walker millinery store.

Then, too, the new fall hats for children are attracting a great amount of attention. All the new ideas offered this season will be found here. For school wear or for more dressy occasions. Prices as low as 75c each.



Walker's
CORNER 3rd SO. AND MAIN
Phones: Independent—227; Bell—EXCHANGE 22
Call all departments.

A store of specialties is this.
This is an age of specialization. In medicine, in engineering, in architecture, in finance—it is always the specialist who wins success, simply because he has the knowledge and the experience and the skill in his particular line.
So this store has been built up by specialization in each of its many departments of service.
Each branch of the great institution is in charge of a leader who has made that particular branch of the business his life's work, his whole time and energy can be devoted to his own line and consequently the result is as near perfection as possible.
Good service is the policy of this store. Good service has brought Walker's to be Salt Lake's shopping center.

Ten thousand yards of delicately tinted crepe de chenes at 85c the yard

85c This is one of the most important announcements we ever made. The quantity, in the first place, is tremendous—the quality, in the second place, is superb, and the price, in the third place, is way below the usual. This lot was purchased by our buyer at a great saving, owing to the fact that he took the entire lot. You will buy them to a correspondingly great saving. **85c**

They are the daintiest effects ever brought to this city. Delicate designs on white, blue, cream and pink grounds. For evening gowns or scarfs there is no better fabric manufactured. See them in our Third South windows.

Monday and week, these will be offered at the very special price, the 85c yard.

Silk department—Center aisle—Main store.

Neat tailored suits for misses and women

A splendid assortment of handsome tailored suits for fall now on our floor. Very stunning effects of chiffon broadcloths and fancy broadcloths in all the semi-fitted and tight fitting modes. The 30, 36 and 51-inch lengths are all shown. Prices range from \$20.00 to \$100.00 each.

Our showing of waists is now nearing completion. Already there are elegant creations of nets and plaid silks, with trimming of laces and tucks. Prices begin at \$5.75 and range upward.

Handsome walking skirts now exhibited for fall. There are Panamas, Voiles, Serges and fancy Broadcloths. Very smart models. Prices begin at \$6.75.

A beautiful showing of new fall petticoats, made of finest quality silks, in newest models. All excellently tailored. The accordion pleated circular flounce is a distinguishing feature. Shades to match any fall costume. Prices from \$7.00 each to the more expensive kinds.

Our juvenile section

Better than ever—bigger than ever. This department has won the honor of being called one of our leading departments, so thoroughly has it been handled. The class of merchandise will admit of nothing else—and the trade too—the very best in the city, tells the story.

People realize that the very best garments manufactured for boys and girls will be found at Walker's. Our garments are made right—every one carefully designed and tailored.

The line of boys' suits this season is better than ever. Larger variety to choose from and the styles are right up-to-the-minute. Prices: \$3.50 the suit and up.

Boys' hats, caps and tam o' shanters in all correct fall shapes and materials. 50c and upward.

First floor—Annex.

Val laces

A one hundred dozen lot—including beautiful design in laces and insertions. Values 75c to \$1.25 the dozen. This week we offer them at the very special price—

69 cents the dozen

Center aisle—Main store.

Knit underwear and hostelry

Fall lines of "Harvard Mills" underwear now in. Strictly sanitary garments—hand finished, perfect fitting, all weights, all sizes, all styles.

Ruben's Infants' shirts—known over the entire country as "the best."

Our school hose for children.

This has been one of our most selected lines this season. Every effort was made to bring to Salt Lake City the most excellent line of children's hostelry ever displayed here.

Quality, finish and price all entered into the transaction. The result is, you may select from a stock of children's hose—the very best money can buy and at prices lower than such values should command.

East aisle—Main store.

Interesting arrivals in the "Men's corner"

Fancy handkerchiefs—A good variety of the latest novelty patterns—10c each or three for 25c.

Fine linen handkerchiefs—our own importations. All widths of hems 15c to \$1.00 each.

Initial linen handkerchiefs—any letter. 35c to 50c each.

Novelty handkerchiefs—boxed singly—pure linen, narrow colored borders. 50c each or six for \$2.75.

Knipp pure linen union suits, shirts and drawers. Warranted to be pure linen. Full line of sizes.

"Staley" fine Egyptian cotton, all wool-mixed underwear. Made of finest yarns. All weights and qualities. \$1.00 to \$3.00 the garment.

Bon Bon French cashmere undershirts and drawers in light weights, natural color. \$1.50 the garment.

Main street door—right on your way to the postoffice.

Women's footwear for fall

Already this department is rushed with fall orders. The demand for high shoes has started earlier than usual, and but for the foresight of our buyer in getting stock in early, we would have been unequal to the occasion. However, we are showing complete lines in all grades—the popular line being the one at \$3.50. Remarkable style and finish noticeable in this line. They're "Cross's."

The Army Oak school shoes for boys still hold first place—a new shipment of these now on hand.

"Perrin's" gloves—just ask for "Perrin's"

When a woman says "Perrin's" we know that she knows. Every good quality is represented by the word "Perrin's". We are the only people who sell "Perrin's" gloves in this city. We have every size, every length and every color.

Standard Patterns made dressmaking easy—Try them. Absolutely accurate and up-to-the minute. 10c and 15c each.

Accumulation sales in the linen section

Lengths of table linen from 1 1/2 to 5 yards greatly reduced. Prices range from 30c to \$10.00 each.

Odds and ends of napkins in half dozen lots, priced at 20c to \$4.15 the half dozen.

Accumulated lengths of linen cambrics, linen suitings, crashes, lunch cloths, tray cloths and centerpieces will be sold this week at greatly reduced prices.

Hemmed Turkish towels underpriced like this:

Turkish towels, pure white bleached, size 18 by 36; worth 12 1/2c each, choice Monday and week

9 cents

18c towels for 13c 35c towels for 24c
25c towels for 16c 45c towels for 31c
55c towels for 42c

Fancy goods designed for fall

Belt buckles in singles and sets—handsome effects in jade, coral, turquoise and amethyst settings.

New ideas in back combs—hand-carved, mounted with jade, coral, amethyst and all the new settings.

Shell barettes in plain shell or mounted.

Splendid collection of dainty veil pins.

Newest ideas in bracelets of all kinds.

Imported belts in gold braids and velvets—fitted with handsome buckles.

Center aisle—back. Main store.

See for Yourself
whether coffee hurts you.
Stop 10 days and try well-made



POSTUM
"There's a Reason."

BURNING HER PAST.
(Cleveland Plain Dealer.)
"Any flat resident would hate to give up gas stoves and have to go back to the old-fashioned coal range," remarked the janitor of an east side apartment house a day or two ago, "but the lack of old-fashioned stoves and open grates causes some awful flurries among the

young women in flats every now and then."
"There's a little woman out at our place that's just been worried about to death, sittin' up nights ponderin' and wonderin' where she could find a stove."
"She was just about a wreck when she hunted me up yesterday and asked me if she could burn some things in the furnace."

"Put 'em outside your door," I told her, "and I'll burn 'em up some mornin'." But that wouldn't do at all. Then I told her that whatever it was I would burn it right away if she wanted me to.
"Still she wasn't satisfied, and wanted to know if she couldn't go down and burn 'em herself. I told her to bring whatever it was down in the basement. I was willing to bother with it, just to see what

was up."
"Well, she went chasin' upstairs, and in a little while she hustled down with a whole half-bushel basket full of letters. Yes, I don't know whether they were all from the same fellow or not, but she said that she had a 'lot of notes that were of a private nature,' and was afraid that the building might get on fire some night, and they would get all scattered. She in-

sisted on putting 'em all in the fire herself, and kept firin' up until they were all in ashes."
A Strange Phenomenon.
(Rochester Herald.)
It is not often that an echo—even political—precedes the voice.