

T H E S I S

DIPS AND THEIR USES

o o o o

Harry G. F. Oman

upon graduation from the

K A N S A S S T A T E A G R I C U L T U R A L C O L L E G E

Class of 1907.

o o o

o

DIPS AND THEIR USES.

oooooooooo
oooooooooo
oooooo
oooo
oo

I. Introduction.

II. Kinds of Dips.

III. Uses of Dips.

IV. The Relation of Dips to Their Uses.

V. Methods of Dipping.

DIPS AND THEIR USES.
°°°
°

It has been said that nine farmers out of every ten treat their live-stock exactly as they treat themselves; that is to say when they feel out of sorts they take a dose of physic and if that does not help they go to the doctor and learn when it is too late, that they have a serious disease which might have been prevented with a little caution, or cured if attended to earlier.

There is a tendency to underestimate the economic importance of external parasites and parasitic diseases, especially those parasites that do not cause scabby formations on the skin as the injurious effect produced by them is not always recognized as being parasitic in origin. The animal apparently is in a healthy condition but they do not do well, the irritation and annoyance caused by the parasites prevent them from making a vigorous growth, which reduces their constitution and makes them more liable to disease. Animals that are weak and out of condition invite disease germs and in this way a herd may become infected with a serious disease.

Much of the enormous loss to breeders and stockmen caused by parasites and diseases can be prevented, stopped and cured by the farmers themselves. That the parasites and diseases have developed to the extent that they now have is due large to the carelessness of the stockmen and to the lax government regulations, as they can easily be prevented

or extirminated if proper precautions are taken and the proper measures observed in affecting the cure.

For every disease there is also a cure or at least there are attempts made to find a remedy and various remedies in the form of dips have been proposed by the Govt. Experiment Stations and by commercially interested parties. There is found on the market various dips accompanied by testimonials and guarantees and undoubtedly many of them are effective; few can be found which some persons do not consider far superior and by others will be considered far inferior to all dips known, and few can be named that have not cured cases for which they were recommended and probably there are more with which failures have not been reported. The failures reported are probably not all due to inferior dip but to the carelessness of the one who used the dip. However under these conditions the farmer needs to take precautions and not be deceived by exaggerated statements in either extreme.

Concerning precautions in the choice of dips, the following extract is taken from Farmers' Bulletin No. 159, of the U. S. Department of Agriculture. "He should know the composition of the material he is using. If he desires to use a ready made dip, let him inform himself of its exact nature in order to prevent impositions and guard against dangers. He would do well to refuse to purchase and use any prepared mixtures which does not bear on each package, a

printed statement of the ingredients and their proportions which the manufacturer guarantees to be found in the package. He would also do well to avoid any compound which irresponsible parties advertise as "the only sure cure for scab, etc. "

The different kinds of dips that are used may be classified as:

1. Proprietary, or ready made dips; the commercial dips sold on the market, 2, government or homemade dips; dips made according to formula and approved by the government.

As already inferred many of the proprietary dips are to be recommended as effective, but the government has insisted on the use of homemade dips. In Farmers' Bulletin No. 159 attention is called to the fact that it was almost entirely by the use of homemade mixtures that scab was eradicated from certain of the Australian Colonies. In New South Wales an act was passed about 1851 to slaughter all scabby sheep and the few remaining were destroyed under the act, but the disease appeared again in 1863 when the act was repealed and the scabby sheep, about 40,000, were cured by the use of tobacco and sulphur.

Recent experiments and investigations with the proprietary dips and particularly with the coal-tar dip, have proven themselves to be efficacious and has led the various Experiment Stations to recommend their use. This has also

been recognized by the Bureau of Animal Industry, and in the late published "Regulations of the Secretary of Agriculture," which took effect April 15, 1907, provisions were made for the use of propriety dips in official dipping. Under Regulation 33 (for dipping sheep) the dips now approved are:

1. The tobacco and sulfur dip, made with sufficient extract of tobacco or nicotine solution to give a mixture containing not less than five one-hundredths of one per cent if nicotine and two per cent of sulfur, provided that for the first dipping of infested sheep in lieu of the sulfur herein prescribed, a sufficient additional amount of extract of tobacco or nicotine shall be used to give a mixture not less than seven one-hundredths of one per cent. of nicotine.

2. The lime and sulfur dip, made by mixing eight pounds of unslacked lime and twenty-four pounds of flowers of sulfur boiled in 30 gallons of water for not less than two hours. All sediment should be allowed to subside before the liquid is placed in the dipping vat. This liquid should be diluted to make 100 gallons of the mixture before using.

And pending further investigations, the following described dips:

3. cresol dip, which consists of a mixture of cresylic acid and soap. When diluted ready for use, this dip should contain one half of one percent of cresylic acid.

4. The coal-tar creosote dip, which is made by mixing coal-tar creosote or coal-tar oils and cresylic acid separately with resin soap in varying proportions. This dip should contain when diluted ready for use, not less than one per cent by weight of coal-tar oils, and cresylic acid. In no case should the diluted dip contain more than four tenths of one per cent nor less than one tenth of one per cent of cresylic acid; but when the proportions of cresylic acid falls below two tenths of one per cent the coal-tar oils should be increased sufficiently to bring the total of tar oils and the cresylic acid in the diluted dip to 1.2 per cent.

Manufacturers who desire the Department to approve their dips for official dipping should submit a sample of their product to the Bureau of Animal Industry in Washington and accompany this with the formula used in preparing the dip. Before a proprietary substance is approved for use in official dipping the manufacturers must agree as follows:

1. To recommend for sheep scab, a dilution of his product which is approved by the Department of Agriculture.
2. To maintain his product of uniform composition.
3. To place on the packages of the dip, which have been printed, the following statement:

A sample of this product has been submitted to the Department of Agriculture for examination. We guarantee the contents of this package to be of the same composition

as the sample submitted to the Department, and that when diluted according to the directions printed hereon for the treatment of sheep scab, it will give a dipping fluid of the composition required of a ----- (name of the class of dips to which the product belongs) dip by the regulations of the Secretary of Agriculture governing sheep scab.

4. To have on containers or advertising matter, no reference to the United States Govt. except as printed in the preceding paragraph.

The different kinds of proprietary dips are the coal-tar dip, carbolic dip, and the arsenical dip. The latter is put up in the form of powder.

Carbolic and arsenical dips may also be homemade. Formulae are given in the Govt. Bulletins, but their use is not recommended. Carbolic or arsenical dips in any form are not to be recommended as there is more or less danger connected with their use. The chief ingredient is a deadly poison and unless special precautions are taken evil effects may be the result. According to the statement of a prominent manufacturer of both arsenical and non-poisonous dips, the arsenical dip has an evil effect upon the wool of sheep and also on the skin and on the skin of any other kind of animal that may be dipped in the mixture. The use of arsenical dips is unnecessary as they are no more effective than the non-poisonous; they are more imitating and the danger is eliminated by using non-poisonous dips.

The coal-tar dips, the lime and sulfur, tobacco and sulfur, and the oils and emulsions are non-poisonous and can safely be handled by inexperienced persons. Beaumont crude petroleum and similar oils have been approved as dips and are largely used.

Some formulae for lime and sulfur dips are as follows:
Treatment for hog lice:

Kerosene emulsions:

- | | | | |
|-------|-----------------------|--------|--------------------|
| (A) | 1. Hard soap, 1-2 lb. | (BB) | Soft soap 1 qt. |
| | 2. Kerosene 2 gal. | | Hard suds, 1-4 lb. |
| | 3. Water, 1 gal. | | Kerosene, 1 pt. |
| | | | Water, 2 qts. |

Boil the water and the soap until the latter is dissolved then add the kerosene and agitate until an emulsion is formed. If thoroughly mixed this will form a gelatinous mass on cooling; it keeps indefinitely and should be diluted to twenty gallons with warm water when used.

(C) Sour milk, 4 gls.

Kerosene , 2 "

Mix the milk and kerosene and dilute with warm water to 20 gallons.

For Mange in hogs:

Unslaked lime, 10 lbs.

Flowers of sulfur, 24 lbs.

Water, 100 gallons.

Slack the lime with sufficient water to make a thin paste and stir in the sulfur. Boil the mixture with 25 gallons of

water for two hours. Allow the sediment to settle, then draw off the liquid and dilute to 100 gallons with warm water. The proportions should be exact.

For Scab in Cattle:

Flowers of sulfur, 21 lbs.

Unslacked lime, 16 3-4 lbs.

Water, 100 gallons.

For Sheep Scab:

(A) Tobacco leaves, 1 lb.

Flowers of sulfur, 1 lb.

Water, 6 gallons.

Place good leaf or manufactured tobacco in a covered boiler in cold or luke warm water and allow to stand about 24 hours. On the evening before dipping, bring the water to near boiling point for an instant; then remove and allow the mixture to stand over night. When ready to dip, thoroughly strain the infusion and mix the liquid with the sulfur gruel and add enough water to make the required amount.

(B) Flowers of sulfur, 24 lbs.

Unslacked lime, 8 "

Water 100 gals.

When using lime and sulfur in dips, care should be taken to use them in right proportions. Too much of either or both to the amount of water is dangerous. Sulfur has a bad effect on wool so that when dipping sheep, the sediment should be carefully strained.

The general uses for which dips are made is to kill parasites and to eradicate parasitic diseases. This is probably the only use made of the home-made dips, but the manufacturers of coal-tar preparations make further claims for their products. Beside being parasiticides they hold that their preparations are disinfectant, antiseptic, and parasiticide.

At the Oklahoma Station a test was made of the disinfecting power of the coal-tar dips to determine if any or all of them were reliable disinfectants when used in very dilute solutions. The preparations tested were Zenoleum, Cremoline, Lincoln Dip, Car-Sul, Moore's Hog Remedy, and Chloro-Naphtholeum. The method was as follows:

Five cc of 48 hour bouillon culture of the germ to be used were added to 94 cc of sterile water. One drop of this mixture was added to 5 cc of sterile water and three and five loops respectively were added to two agar tubes and plates poured. After the plates were poured one cc of the disinfectant to be tested was added to the mixture of germs and water, making 100 cc or one per cent solution of the disinfectant. At the end of the time indicated, in the tables, one drop of the solution was placed in 5 cc of sterile water and from this plates were poured, using three loops for one and five loops for the other, as was done in making the check plates. The columns indicating the "0", mean that the drop was removed from the flask as quickly as possible after the disinfectant was added, which would be from ten

to twenty seconds. The colonies in all plates were counted at the end of 94 hours' incubation at 37° C.

The results obtained are fairly uniform with the different kinds and to show the results of this experiment, a few tables will be given.

In explanation of the table it should be said that the figures given are the averages obtained. The spaces containing 0 indicates that all the germs were killed, and the spaces containing the dash (-) indicate that no test was made for that time. The figures at the head of the columns indicate the number of minutes the germs were exposed to the disinfectant.

Table No. 1.

Disinfecting power of one per cent of Lincoln Dip.

Name of germ.	Average number of bacteria per loop and the number of minutes the germs were exposed.											
	check	0	1-2	1	2	3	5	8	10	12	15	30
B. Hog Cholera	205	8	---	0	---	0	0	0	0	---	---	---
Duplicate	388	130	193	95	55	---	---	---	---	---	---	---
B. Swine Plague	70	0	---	0	---	0	0	0	0	---	---	---
Duplicate	407	187	217	70	8	-	-	-	-	-	-	-
M. Aureus	44	14	--	0	-	0	0	0	0	-	-	-
Duplicate	54	28	16	18	9	-	-	-	-	-	-	-
B. Coli	39	0	--	0	-	0	0	0	0	-	-	-
Duplicate.	422	99	106	67	51	-	-	-	-	-	-	-
B. Subtilis	73	20	24	25	-24	17	24	-	21	21	19	
Duplicate.	28	7	4	9	7	-11	9	8	-	11	10	
B. Anthracis	25	2	2	2	-	2	2	1	-	3	2	3
Duplicate	31	6	6	6	7	-	8	6	11	-	5	7

Table II.
Disinfecting power of one per cent solution of Zenoleum.

Name of germ		Average No. of bacteria per loop and number of minutes germ was exposed to disinfectant.									
		check	0	1-2	1	2	3	5	8	10	12
B. Hog Cholera	126	0	-	0	-	0	0	0	0	0	
Duplicate	123	0	0	0	0	-	-	-	-	-	
B. Swine Plague	113	0	-	0	-	0	0	0	0	0	
Duplicate	181	0	0	0	0	-	-	-	-	-	
M. Aureus	57	3	-	0	-	0	0	0	0	0	
Duplicate	16	4	0	0	0	-	-	-	-	-	
B. Cori	485	0	-	0	-	0	0	0	0	0	
Duplicate	93	0	0	0	0	-	-	-	-	-	
B. Subtilis	20	0	-	0	-	0	0	0	0	0	
Duplicate	14	1	*	*	1	-	-	-	-	-	
B. Anthracis	7	0	-	0	0	0	0	0	0	0	
Duplicate.	10	2	1	1	2	-	-	-	-	-	

*Average less than one loop.

Tables III and IV.
Disinfecting power of a one per cent solution of

Name of germ.		Chloro-Naphtholeum.					Car-Sul.				
		Average No. of bacteria per loop and number of minutes germs were exposed to disinfectants.									
		Check	0	1-2	1	2	Check	0	1-2	1	5
B. Hog Cholera	112	0	0	0	0	187	0	0	0	0	0
Duplicate	674	0	0	0	0	169	*	0	0	0	
Duplicate											
B. Swine Plague	124	0	0	0	0	211	0	0	0	0	
Duplicate	511	0	0	0	0	368	0	0	0	0	
M. Auers.	51	0	0	0	0	8	1	1	0	0	
Duplicate	27	1	0	0	0	26	4	1	0	0	
B. Coli	53	*	0	0	0	280	0	0	0	0	
Duplicate	450	0	0	0	0	439	*	0	0	0	
B. Substilis	37	*	*	2	0	115	13	17	23	-	-
Duplicate	74	20	17	17	15	30	12	5	8	9	9
B. Anthracis	17	*	*	*	*	15	2	23	2	3	2
Duplicate.	52	7	-	6	5	20	*	8	*	*	0

* Average less than one loop

The above tables will suffice to illustrate the comparative efficacy of the coal-tar dips as disinfectants.

The duplicates for the Lincoln Dip test were made six months later than the first and from the figures it seems that the Lincoln Dip had deteriorated in strength.

The disinfecting power of the coal-tar dip, as shown by the tables is fully equal to the disinfecting power of a one per cent solution of carbolic acid, and they compare very favorably with that of creolin. Creolin is very extensively used in both human and veterinary surgery. Mortipest Sheep Dip and kerosene emulsions were also tested but neither showed any marked disinfecting power.

While a one per cent solution seemed effective when testing in the laboratory, a stronger solution, two or three per cent, is recommended for general disinfecting purposes. The coal-tar dips are becoming very popular as disinfectants in hospitals and are often used as a remedy for wounds in live-stock. As to their use as to preventatives and deoderants, the same rule as to per cent solution and methods of application is true for their use as disinfectants.

The one great use for which all dips are used is to eradicate parasites. The diseases for which they are used as such are: Sheep scab, Mange in cattle, hogs and horses; They are also used for hog lice, sheep ticks, or any other external parasites. Besides their use on live-stock, dips are also used on other domestic animals but these will not

be taken up for discussion.

Common sheep scab is caused by what is known as (*Psorptes communis var ovis*) This Germ^t inhabits the regions on the surface of the body which are most thickly covered with wool. Their bites are followed by intense itching with irritation and disorders of the skin, causing the sheep to become restless, to bite and to scratch themselves, causing the fleece to become matted and ragged. Scabs fall off and are replaced by thicker and more adherent ones. Under these crusts the mites live and multiply.

Scab is exceedingly contagious and when the disease has once been introduced into a flock it spreads rapidly. The disease may not always be fatal but the animals loose flesh and deteriorate in vigor and constitution and become less able to withstand outside influences. Unless the mites are extirminated, great losses occur and the disease will always be present.

Mange or scab in cattle is caused by a parasite similar to the sheep scab mite, being of the same genus and species, but a different variety. The name is (*Psoroptes communis wavis*) The nature of the disease is very similar to sheep scab and will not be further discussed. The same is true of mange in hogs and horses. The name of the parasite in hogs is (*Sarcoptes scaliei vox suis*) Other external parasites such as the hog louse and the sheep tick, do not cause scab formation nore is the injury as great, but if

they are present in large numbers they interfere with the general health and growth of the animal.

When treating the animal for the above named diseases, the nature of the disease, what you are dipping, and what you are dipping for, should be taken into consideration. Animals affected with scabies are covered with scabs or crusts, under which the parasites live, and to bring the dip in contact with the mite, the animal should either be carefully scrubbed to remove the scab before dipping, or immersed long enough to allow the liquid to soak through the scab. The mites are easily killed if once exposed to the liquid. Sheep ticks are more easily killed than hog lice, and the treatment should not be the same.

In an experiment made to test the different coal-tar preparations, it was found that in the same per cent of solution and temperature (3 %, 108° F.) the sheep ticks were killed in about fifteen seconds while the hog lice were not all killed when immersed in the liquid for two minutes. A test was made also with a kerosene emulsion on hog lice and was found to be very efficacious. While the dips used for scab will also kill hog lice, it is best when dipping for lice to use emulsion or some oil preparation.

Some tests were made in the laboratory to determine the relative value of the coal-tar dips as compared with one another and with kerosene emulsions. Sheep ticks were placed on a dry surface and the liquid applied directly on them.

Hog lice were used in the same way. The time elapsing between the application and the instant they were dead was carefully taken. The hog lice were immersed in the liquid and at the end of the stated time they were removed and placed on a dry surface. The following data was obtained. The tables will explain the results:

Test with sheep ticks.

Name of dip.	Percent solution.	Temp. F.	Time in seconds required to kill ticks.					Average.
			Trial					
			1st.	2nd.	3rd.	4th	5th.	
Chloro-Napholeum.	3	108°	13	12	16	17	15	14.6
Cremoline	3	"	19	17	15	17	16	16.4
Car-Sul	3"	"	13	13	14	14	13	13.4
Kreso	"	"	14	18	17	15	15	15.8
Zenoleum	"	"	15	19	14	13	18	15.8
Chlo-Nap.	"	90°	23	21	26	17	26	22.6
Cremoline	"	"	19	21	26	21	22	22
Car-Sul	"	"	20	18	18	19	18	18.6
Kreso	"	"	17	17	22	21	20	19.4
Zenoleum	"	"	29	24	21	25	24	24.6
ChleeNap.	1	86°	26	25	28	26	24	25.6
Cremoline	1	"	27	25	24	27	25	25.6
Car-Sul	"	"	22	26	22	24	23	23.4
Kreso	"	"	25	22	26	21	28	24.4
Zenoleum	"	"	23	24	26	22	25	24
Chlo-Nap.	"	108	20	16	23	17	17	18.6
Cremoline	"	"	17	18	18	18	16	17.4
Car-Sul	"	"	16	13	16	17	12	14.8
Kreso	"	"	15	14	17	16	18	16
Zenoleum	"	"	18	20	18	16	14	17.2
Chlo-Nap.	1	73°	30	34	45	36	41	37.4

It will be noticed that Car-Sul is the lowest in time in all the tests and in this test appears to be the most efficacious. With the other dips the time varies in the

different tests in comparison with one another so that no conclusions can be drawn as to the relative efficiency of the dips.

Another thing to be noticed is that the efficiency increases with the rise in temperature. A one per cent solution at 108° F is almost as effective as a three per cent solution at 85°. There is also a wide difference between a one per cent solution at 108° and at 73° (room temperature). The conclusion may be made that coal-tar dips should be heated if possible.

Test With Hog Lice.

Dip used	per cent solution	Temp. F.	Time immersed. min.	No. immersed.	No. killed.
Cremoline	3	110°	2	10	8
Chlo-Nap.	"	"	2	"	5
Car-Sul	"	"	2	"	10
Kreso	"	"	2	"	10
Zenoleum	"	"	2	"	4
Chlo-Naph	5	98°	2	"	8
Cremoline	"	"	2	"	9
Car-Sul	"	"	2	"	8
Kreso	"	"	2	"	8
Zenoleum	"	"	2	"	4
Chlo-Nap.	25	85	30	"	10
Cremoline	"	"	30	"	6
Car-Sul	"	"	30	"	10
Kreso	"	"	30	"	8
Zenoleum	"	"	30	"	10
Chlo-Nap	15	"	15	"	10
Cremoline	"	"	15	"	18
Car-Sul	"	"	15	"	8
Kreso	"	"	15	"	8
Zenoleum.	"	"	15	"	9

continued

(con.)	98° F	Trials					Av.
		1st	2nd	3rd	4th	5th	
Kerosene Emulsion		14 sec.	16	16	12	13	14.2
Hard soap 1-2 lb.							
Kerosene 2 gal.							
Water 20 gal.							

In the hog lice test the results vary and nothing conclusive as the the relative value of the different dips can be made. This is probably due to age and individuality of the lice. Some extreme variations were found. In one test nine of the lice were dead when removed from the liquid but the tenth one survived and became very spry and would undoubtedly have lived if put back on a hog. In some tests part of the lice partly revived but they would have eventually have died from the effects of the dip. The table shows that a rather strong solution should be used for hog lice.

The kerosene solution was particularly efficacious the average time being only 14.2 seconds. Pure kerosene is often used on hogs but it hardly should be recommended as the kerosene may cause the hairs to fall off and it may also be injurious to the skin. Kerosene should never be used on brood sows as that is sure to cause abortion.

Methods of Dipping.

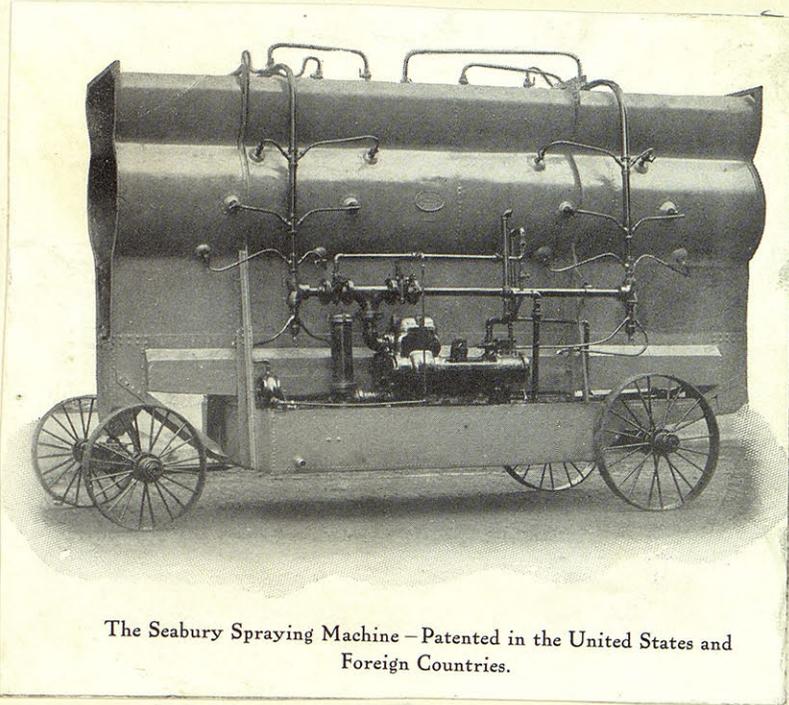
The different methods of applying dip are hand treatment, sprays, the swimming, and cage vats.

Hand treatment is a very slow process and is impracticable with large herds. However, with small herds

where the expense of providing vats is too great, in proportion to the use that might be made of it, this is the only resort and it can be successfully used. The liquid should be applied with a brush and the animal carefully rubbed all over the body. In winter when dipping would be impossible this can be a means of holding the disease in check if a few animals are noticed to be infected. Sheep and young pigs can be dipped by hand by plunging them into a vat or barrel filled with the dip.

Sprays:

Hand sprays are especially efficient in fighting the hog louse. Any ordinary spray pump can be used. The hogs to be sprayed should be crowded into a small pen and then sprayed until thoroughly soaked, then by causing them to stir around they will crowd upon one another and the liquid will thus be rubbed all over their bodies. It is well to spray the sleeping quarters and thus kill the lice that may remain in the bedding. Hand spraying is more or less wasteful and should not be practiced when other measures are available. A new method and device for spraying has been made by the Seabury Live Stock Spraying Machine and Manufacturing Co. The accompanying cuts show the apparatus and the method of working.



The Seabury Spraying Machine - Patented in the United States and Foreign Countries.



Treating Cattle for Fever Ticks near San Antonio, Texas.

The machine may be placed at the outlet of an ordinary branding chute and the stock driven through. On entering the machine they are showered from every possible angle, the liquid being forced through numerous sprays at a pressure of thirty or forty pounds. The sprays are so located that the application of the liquid is from the rear, consequently goes under the hair and penetrates to the hide. The animal is permitted to go through the machine as rapidly as seems advisable and a large number may be treated in a very short time. Some records claimed by the company are about 501 head of cattle in thirty minutes; 4000 in seven hours, etc.

The liquid used in this machine is an oil spray, crude-oil and water under agitation, in proportion of one of oil to four of water, or one of oil to 7 per cent water. The government Regulations require only one application for official dipping.

The third method of applying dips is by the use of vats, either the swimming vat or the cage vat.

The swimming vat to be the most efficient should be long enough that the time required for the animal to swim the full length of the vat is the required time the animal should be immersed. This will greatly increase the cost of construction and is only practical where large herds are to be dipped. A short vat may be used satisfactorily if some device is made to detain the animals in the liquid. This will, of course, lessen the rapidity with which the animals can be driven

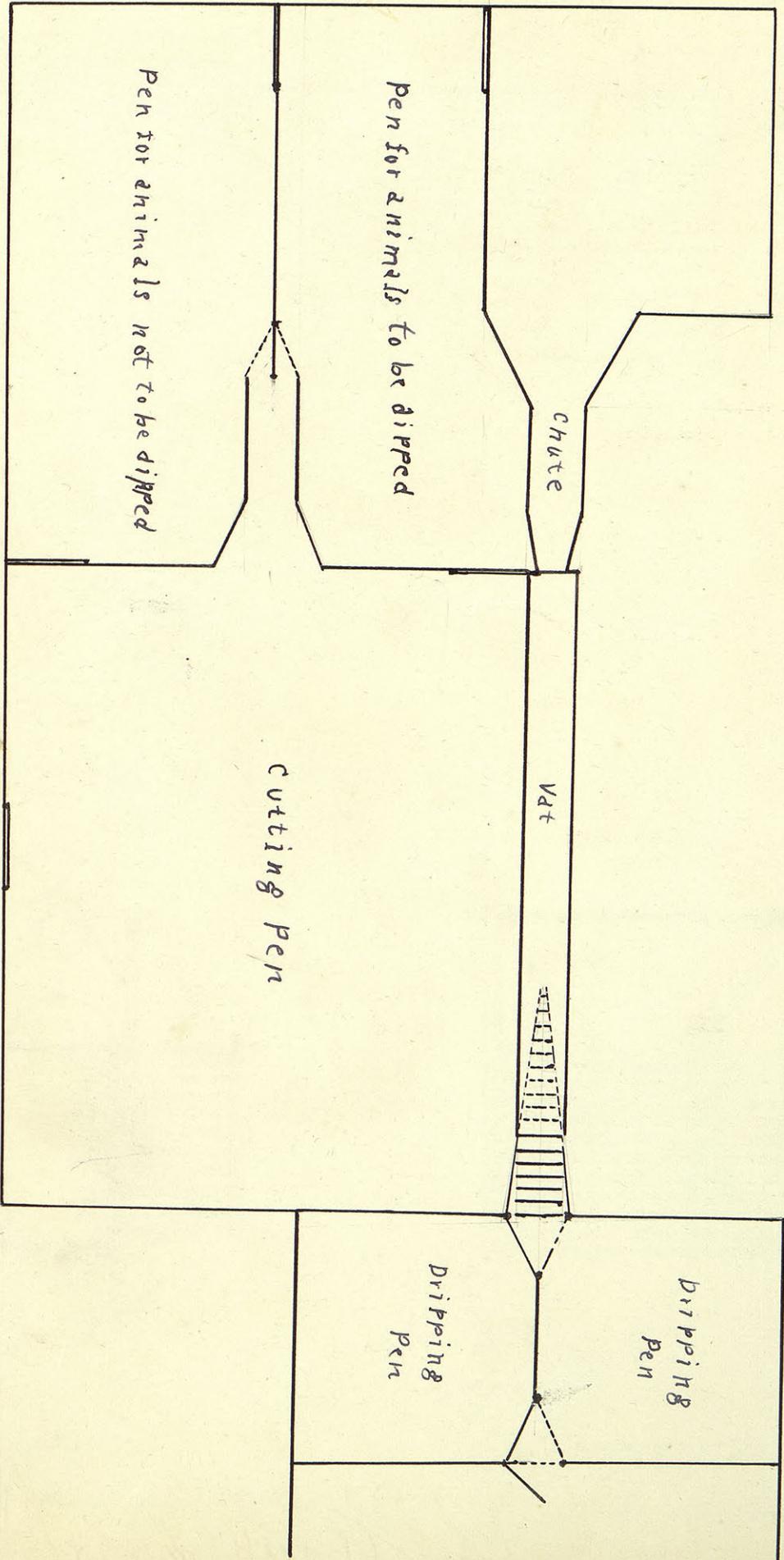
can be driven through, but this objection is offset by the cost of construction and the amount of dip required to fill the vat as compared with the large one.

The objection to a swimming vat is the manner by which the animals enter the vat as there is more or less danger of the animals getting hurt when the plunge is made.

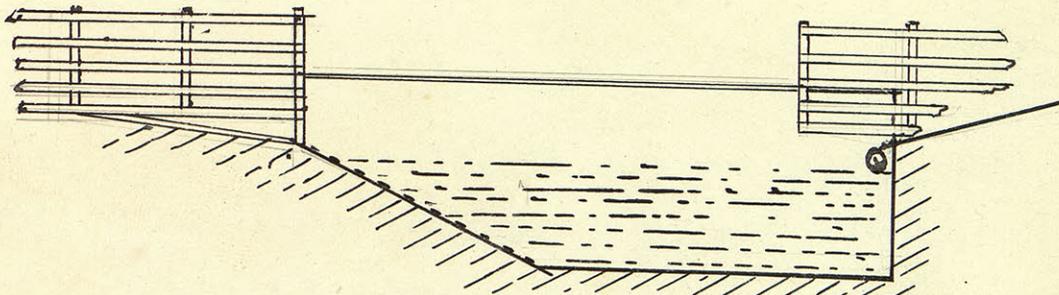
The cage vat is also used very extensively. The cost of construction is probably one strong point in its favor. There is probably less danger of injuring the animals but the process is slow as compared with the swimming vat. A cage vat with a capacity capable of dipping 200 head per day may be built for about \$200. A cheaply constructed swimming tank would cost about \$300.

When dipping in vats a dipping pen should be conveniently made where the animals may be detained to allow the liquid to drip off their bodies or they will therefore necessarily loose much of the liquid.

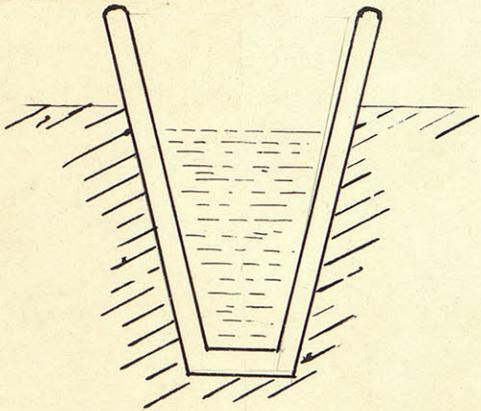
The following diagrams will illustrate the plan of a dipping plant and the construction of the vats.



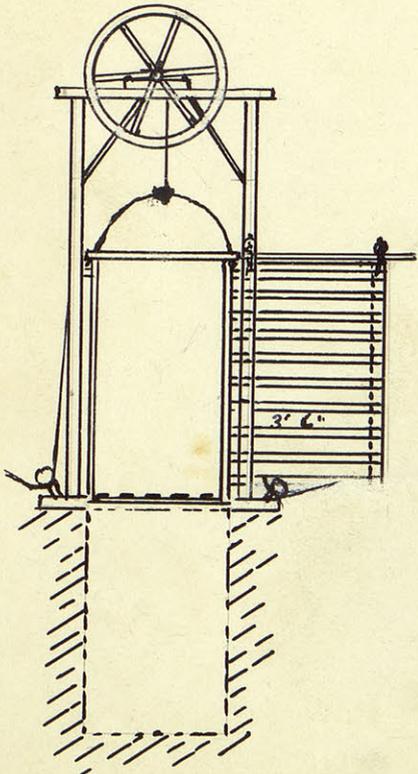
Dipping Plant.



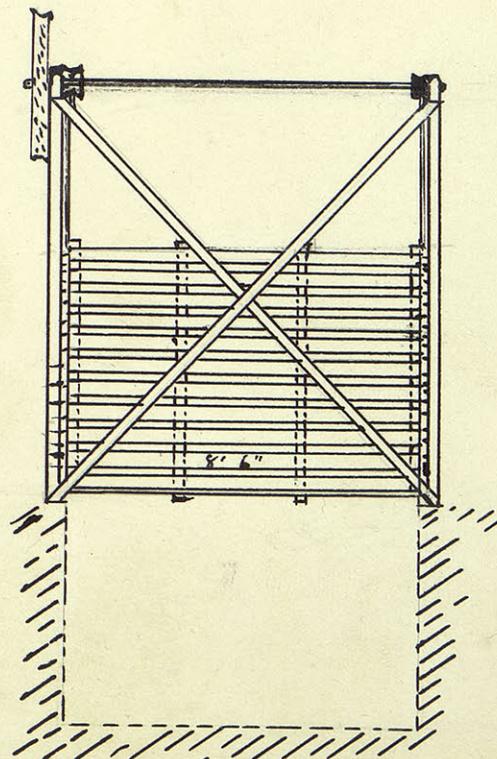
Vertical section of a dipping plant.
(Swimming Vat)



Cross section of tank.



End elevation (Cage vat)



Side elevation

Conclusions.

In conclusion it might be said that for the best progress of the breeder and farmer he should be liberal in the use of dips. It has been said that you cannot dip too often. The person who waits to do his dipping after he has lost an animal or two or until the herd is badly invested, is not up-to-date, and he allows an unnecessary loss. The cost of dips is so small and the trouble of doing the work is so slight that there is no excuse whatever for having a lousy herd.

Harry G. F. Oman.