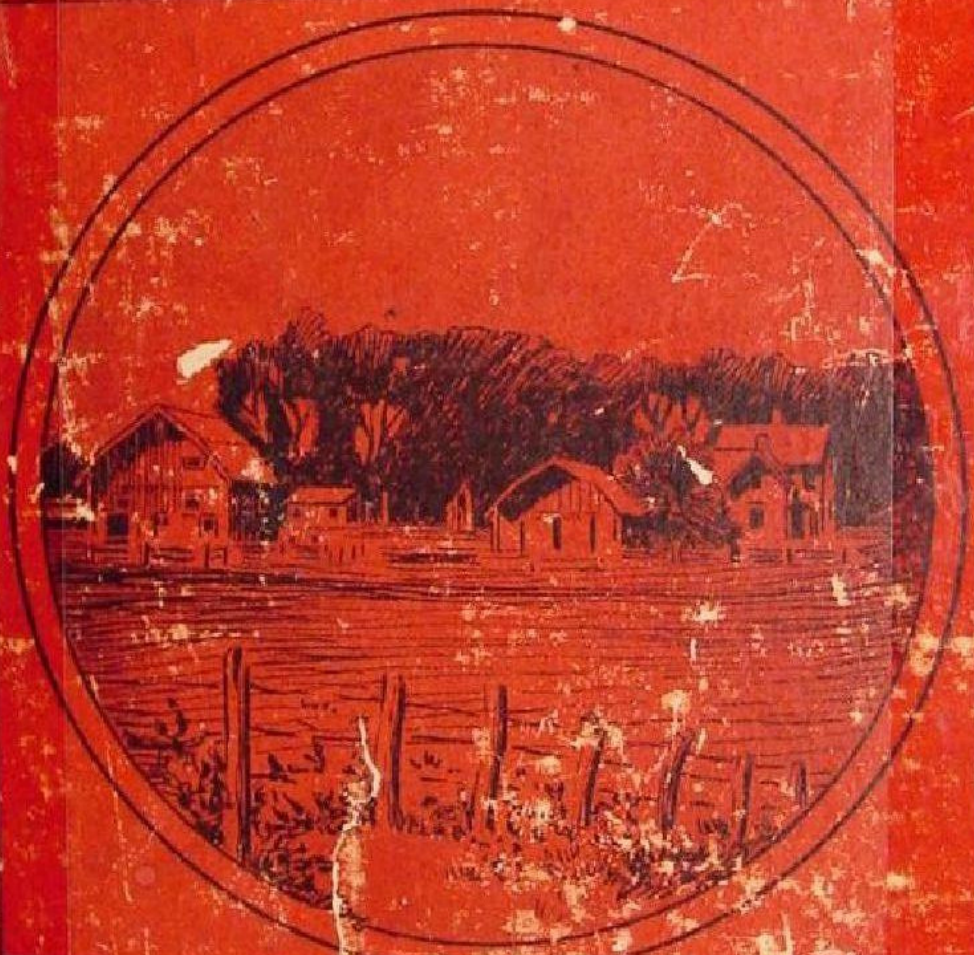
KANSAS FARMER and MAIL & BREEZE

RELIABLE DIRECTORY of Sedgwick County, Kansas



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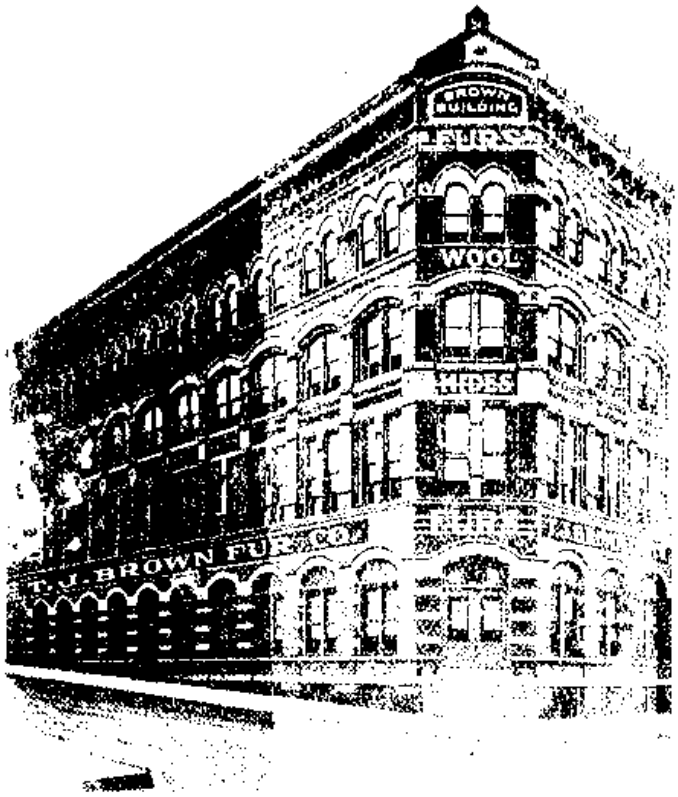

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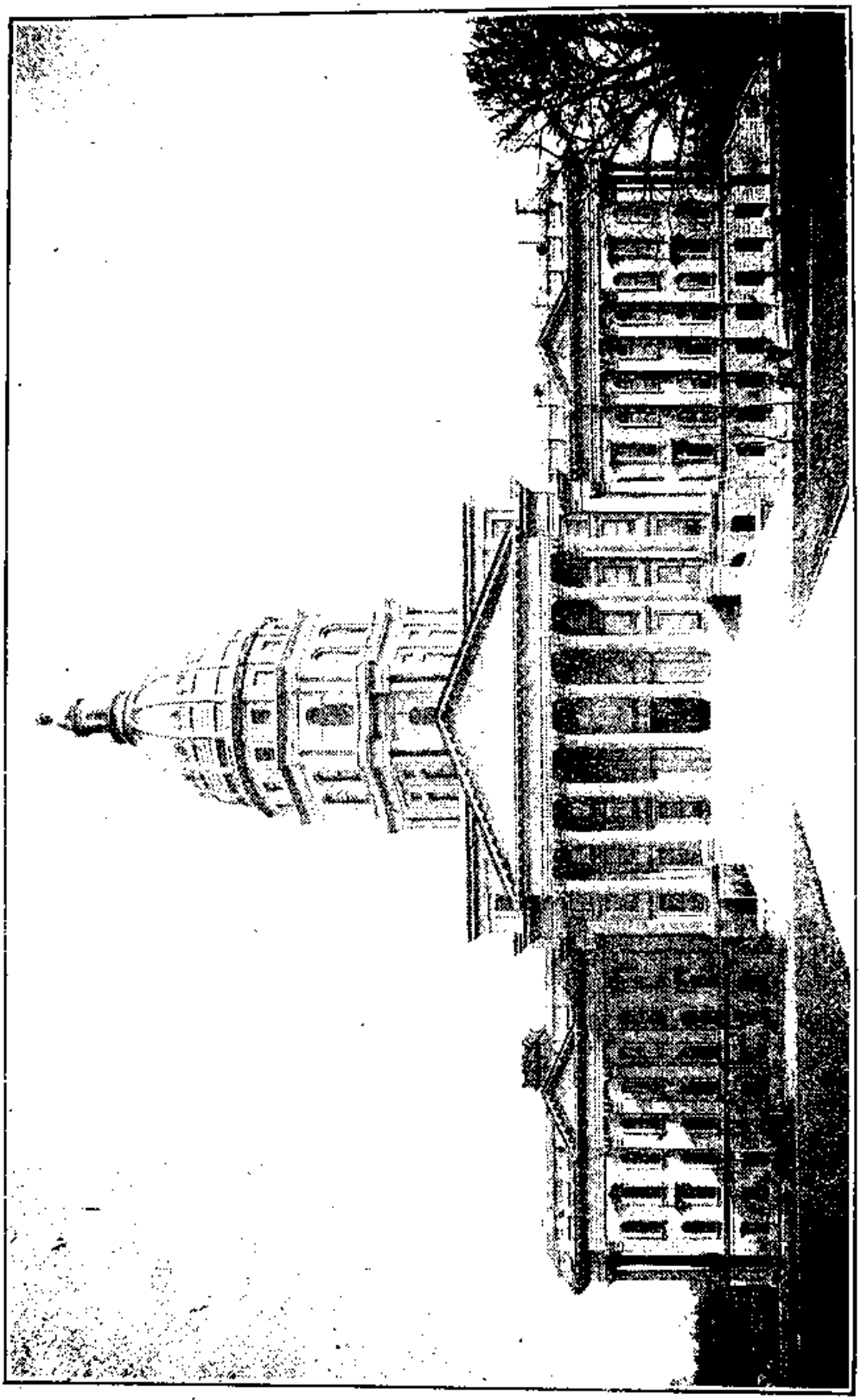
INTRODUCTION

THE KANSAS Farmer and Mail and Breeze takes pleasure in presenting this directory of Sedgwick County. Diligence has been exercised to make it complete and accurate in every respect.

The information which is now placed in your hands has been made possible by the co-operation of the farmers, merchants and breeders of Sedgwick County with the force of men gathering this information, and we wish to express our sincere appreciation for the assistance they have been rendered.

The merchants of Sedgwick County, whose liberal advertising support has aided materially in bearing the expense of publication, are deserving of your patronage, and we hope that you will so favor them whenever possible.

The directory has brought many new readers into the Kansas Farmer and Mail and Breeze family and we shall do all we can, as always, to make them glad they are there.



KANSAS STATE CAPITOL, TOPEKA, KANSAS.

KANSAS

A Historical Sketch

By T. A. McNeal

IT IS, OF COURSE, impossible to compress even a satisfactory outline of Kansas history within the space of a few hundred words. From her beginning as a territory, Kansas has occupied a place in history entirely out of proportion to her population, or even her possible resources.

Other states have grown faster in population. Other states have greater natural resources, but no state admitted to the Union since the adoption of the Consitution has been so continuously in the lime light or taken so prominent a part in the great movements affecting our national life.

Kansas was organized as a territory in 1854 and at that time extended from the Missouri river to the Rocky mountains and at once became the subject of the most bitter political conflict in our history, which culminated seven years later in the great Civil war.

Admitted as a state on January 29, 1861, her first years as a state were as stormy as had been her earlier years as a territory. During the four years of war Kansas furnished more men for the Union army than there were men of military age in the state. During these years the new settlers suffered from hostile invasion, Indian depredations and excessive, long continued drouths which ruined such crops as were planted.

In spite of discouragements and crop failures, shortly after the end of the war, the people of the new state began the erection of the capitol building and proposed to build it without issuing bonds to pay the cost of erection. This policy has been followed, not only in the matter of the state house, but in the building of other state institutions, with the result that Kansas today has public buildings worth perhaps, at a conservative estimate, twenty million dollars with not a dollar of bonded indebtedness.

Starting with no schools or school fund the state now is as well equipped in the matter of schools as any other state in the Union and has gradually built up a permanent endowment for the support of common schools amounting to eleven million dollars.

Classed originally as part of the American desert, the value of its agricultural productions alone, during the year 1918 was thirty-four times as much as was paid by the United States for the entire Louisiana territory.

Agriculture is and always will be the greatest and most important industry. In a single year the wheat fields of Kansas produced a fifth of all the wheat produced in the entire United States and more than was ever produced in any other state of country of equal area.

When Kansas was admitted as a state perhaps very few men would have

been willing to give ten million dollars for the entire state even if they had the money to invest and could have obtained satisfactory title; today the assessed value of the property of the state exceeds three billion dollars.

Kansas has no great cities and probably never will have but has 139 cities and towns ranging in population from one thousand to approximately one hundred thousand. Notwithstanding the fact that the Kansas population was recruited from all nationalities, the percentage of illiteracy is exceedingly small, the state ranking in that respect fourth among the states in the American Union.

Kansas is a pioneer in progressive legislation and her people are forward looking, liberty loving and progressive.

DISEASES OF FARM LIVESTOCK

(From The I. C. S. Farmers' Handbook.)

Any departure from a condition of health in an animal constitutes a diseased condition. In some cases the departure may be so slight and so unimportant as to be of no particular significance. On the other hand, the disturbance may be severe and the condition of the animal so serious that medical or surgical aid is necessary. Some of the more common of the derangements that may require medical aid are described herewith and such treatment suggested as it is practicable for one not skilled in veterinary science to undertake. The treatment of certain complex diseases and certain diseases that are likely to become epidemic and may spread to mankind are matters that should not be left to unskilled hands, for the situation is one that may involve even more than a heavy loss to the owner and to the community. In the case of some diseases lack of proper measures may even result in loss of human life. For these reasons it is always advisable, when there is reason to suspect that a dangerous transmissible disease has broken out, to call a qualified veterinarian. In many states, a state veterinarian is employed and, if notified, he will visit suspected premises or send a deputy to make an inspection, the expense being borne by the state. Every stock owner will do well to post himself as to the provisions made by his own state in this particular, and take steps to make use of any suggestions or assistance that may be available from the state veterinarian's office. Frequently leaders of bulletins are issued by these offices, and these publications may afford timely warning on matters that are of the most absorbing interest to the owner and breeder of livestock.

TRANSMISSIBLE DISEASES

Infectious diseases and contagious diseases, as the terms are usually applied, are those that are transmissible from one animal to another of the same species, and sometimes to those of another species. A *contagious disease* is one that requires immediate contact of healthy animals with diseased animals, or with their excretions, before transmission can take place. This is due to the fact that the casual agent of the disease, usually a bacterium or an animal parasite, cannot exist for an appreciable time outside of or away from its host. Consequently, there is little danger of a healthy animal acquiring a contagious disease unless it comes close enough to one affected with the malady to permit the direct passage of the germs to the unaffected individual. An *infectious disease* is one that does not require close contact in order for transmission to take place, as the casual agents of infectious diseases are able to exist independently outside of the host. Hence, infection from such a disease, spread on the ground, on feed, in water, or in the air may remain virulent for a considerable, and in some cases, an indefinite time, and animals coming in contact with it during this time may contract the disease. This briefly, is the common distinction between infectious and contagious diseases, but it should be understood that there is no absolutely sharp line of demarcation between the two. Some diseases partake of the nature of both infectious and contagious disorders, hence, there is a tendency among pathologists to discontinue the use of these terms and refer to all the diseases included in the two groups as *transmissible diseases*.

Mange, or *scabies*, is an example of a contagious disease. It is caused by a minute animal parasite, which, although it may live for a short time away from the body of its host, is not capable of reproducing under such conditions and consequently cannot exist indefinitely. Healthy animals may contract mange by coming in contact with affected animals, by being confined in quarters or pastures, but recently occupied by affected animals, by the use of blankets, harness, etc., recently used on affected animals, or in fact in any way that permits the living parasite to be transferred during its

life cycle. If, however, sufficient time elapses between the use of these quarters, or articles, by infected animals and their occupation by or coming in contact with healthy animals the disease will not be transmitted, because the parasites will have been unable to maintain themselves during this time away from the host.

Blackleg may be cited as an example of an infectious disease. It is caused by a germ or bacterium capable of maintaining itself for an indefinite time outside of the body of the host. Hence, pastures, quarters, etc., when once infected with the germs of blackleg, are likely to harbor the infection for many years. From the above it is obvious that contagious diseases are much more easily controlled and exterminated than are infectious diseases.

NON-TRANSMISSIBLE DISEASES

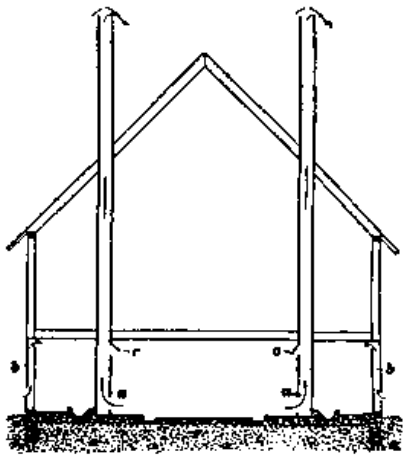
Under the heading of non-transmissible diseases may be grouped the numerous disorders that are not due to a specific organism. Certain forms of indigestion, for example, are due to errors of diet rather than to any specific germ or animal parasite; some skin diseases are not due to parasites, and some diseases of the heart and of the respiratory organs are not traceable to such causes.

SANITARY MEASURES

The maintenance of good sanitary conditions about livestock quarters is of the greatest importance not only in the treatment of animal diseases, but also in their prevention. Although it is not true, as some suppose, that dirt and filth generate disease, it is true that most disease-producing organisms find an ideal breeding ground under such conditions.

Light.—One of the most important steps in making buildings sanitary is a provision for an abundance of light. Direct sunlight is destructive to most disease germs, and buildings should be so placed and designed as to admit a maximum amount. Parts of livestock quarters that do not get direct sunlight should get an abundance of diffused light. Well-lighted interiors are conducive to the contentment of animals and greatly simplify the routine work of feeding, grooming and cleaning the building, for accumulations of dirt and dust are quickly noticed and easily removed.

Ventilation.—Barns that are enclosed on all sides require some provision for ventilation. No domestic animal can be confined in an enclosed space that is not adequately ventilated without some bad effects from it. As a rule, quarters for hogs, sheep, beef cattle, and some other animals are somewhat loosely constructed, or consist of sheds rather than enclosed barns; in such cases it is not advisable or necessary to install an extensive system of ventilation, but if a building is of such a nature as not to admit of good natural ventilation, some means of supplying fresh air and of removing foul air should be provided. The King system of ventilating barns is by far the most practical and satisfactory one in use. By this



system, fresh air is admitted to the interior of the barn at a point near the ceiling and foul air passes out through flues that open near the floor. The accompanying illustration shows a diagram of a barn ventilated by the King system. Foul-air flues and the openings into them near the floor line are seen at *a*. Fresh air inlets are shown at *b*, and at *c* are auxiliary openings into the foul-air flues. The latter openings are to be kept closed except when the temperature of the barn becomes too high, at which time they may be opened to permit warm air near the ceiling to escape.

Disinfection.—Although the sanitary measures already described go a long way toward protecting animals from the ravages of disease-producing organisms, it is, nevertheless, advisable and often absolutely necessary to make use of chemical disinfectants as a means of destroying these organisms. Successful stock raisers commonly make it a rule to apply a disin-

fectant about animal quarters at fixed intervals regardless of whether or not disease is prevalent. Such a course is to be commended, for it tends to prevent the unrestricted multiplication of injurious organisms and may forestall a serious outbreak of disease.

Some of the most commonly-used disinfectants are carbolic acid, corrosive sublimate, formaldehyde, and the coal-tar dips. A brief description of these will be found under their respective names in the discussion of common medicines.

Disinfection, to be effective, must be thorough. In fact it is commonly accepted as true that the inefficient and haphazard use of disinfectants may be even worse than no application, because it is likely to give a false sense of security and also to have the effect of satisfying legal requirements with reference to disinfection, but in reality leaving the danger still present. In stables, sheds, barns, etc., that are to be disinfected, all movable fixtures should be taken out in order that the disinfectant may reach every accessible part of the structure. If wooden floors are in use and they are decaying and broken, it is advisable to remove them also, for beneath them there is sure to be an accumulation of dirt and filth that is favorable to the growth of disease germs. After the interior of the building has been exposed as far as possible by the removal of fixtures, etc., the disinfecting solution should be sprayed on all parts. If a suitable spray pump is not available, scrubbing with a broom, brush, or mop will accomplish practically the same results, and even if spraying is resorted to, the scrubbing process should be applied to walls, floors, etc., where there are accumulations of refuse material.

All fixtures should be treatd with the disinfectant before being returned to the structure, or if they are old and racked a better plan is to install new ones. A concrete floor is one of the most valuable aids in maintaining sanitary conditions, and should be substituted for wooden floors whenever possible.

In rare cases, the use of a gaseous disinfectant such as formaldehyde gas or sulphur dioxide, may be practicable, but in most cases livestock quarters are not sufficiently close to permit of the use of these agents. Hence liquid disinfectants are almost universally used for this purpose.

DIAGNOSIS OF DISEASES

The Pulse.—The pulse is one of the most important aids in the diagnosis of disease, because it serves to indicate the action of the heart and also is, to some extent, an indication of the condition of the nervous system. The pulse rate, or the number of beats per minute, is about as follows in different domestic animals: Horse, 30 to 40 beats per min.; cow, 40 to 50 beats per min.; sheep, 70 to 80 beats per min.; swine, 70 to 80 beats per min.

Owing to the fact that there is a considerable variation in domestic animals, even though they may be in perfect health, and the further fact that experience is necessary in order to make a correct interpretation of pulse, it is not likely that the man unskilled in veterinary science will be able to diagnose diseases by taking the pulse. Nevertheless, it will be of some assistance, when taken in connection with other diagnostic indications that are discussed in following paragraphs.

Temperature.—The following figures indicate the range of temperatures of various animals under normal conditions: Horses, 100° to 101°; cattle, 100° to 103°; sheep, 101° to 104°; swine, 102° to 104°.

Temperatures of domestic animals are best taken by means of a special thermometer known as a clinical thermometer, which may be purchased from any druggist. A considerable rise or fall of temperature, from the figures given, may be taken as an indication of a diseased condition. In general, veterinarians consider that a rise of 6° or more denotes a serious condition, and any considerable fall below normal almost always signifies approaching death. It must be understood, however, that local conditions may operate to bring about considerable variations in temperature, and all readings of the thermometer should be considered in connection with them. For example, excitement heat, or œstrum, hot weather, and other factors may cause considerable rise of temperature. Cool weather, large quantities of cold water or cold feed taken into the body, and some other factors may cause a reduction of

temperature; hence, if at any time the thermometer indicates a considerable departure from normal temperature, an investigation should be made to determine whether it is due to any of these causes.

Respiration.—The rate of breathing and the sounds heard during the process often afford aid in diagnosing disease. Rapid breathing may be due to disease and often constitutes a symptom of the disorders of the respiratory organs. However, it may also be occasioned by extreme heat, excitement, violent exercise, or other factors. Hence, as in preceding cases, it is important that the subject be considered in connection with the conditions that may have influenced it.

Mucous Membranes. — Ordinarily, mucous membranes, as seen in the mouth, nostrils, and other openings into the body have a characteristic pink color that is indicative of health. A diseased condition usually brings about more or less change in the appearance of these membranes. A flushed, congested condition indicates a general inflammation of the tissues, while lack of proper color or paleness is taken as an indication of debility, anemia, or insufficient nutrition.

COMMON MEDICINES

The information presented here is offered merely as a suggestion of what may be done in certain cases and is not to be considered as specific directions for treatment nor is responsibility assumed by the publishers for cases in which favorable results are not forthcoming. The action of all medicines is relative, as is also the dosage of the same, and hence no attempt is made to lay down fixed rules.

Anesthetics.—The term anesthetic is applied to medicinal agents that are used for producing insensibility during periods of pain, or when an operation is being performed. Some of the anesthetics used in veterinary practice are cocaine, chloroform, and ether, but it is scarcely advisable for a layman to administer them. Carbolic acid has a distinct anesthetic action when applied to the skin, and is sometimes applied locally for this purpose.

Anodynes.—Remedies that are used to relieve pain are called anodynes. The following are medicines of this class: Cocaine, menthol, tar, carbolic acid, belladonna, etc. These are used for external applications. Internally, opium, chloral hydrate, and turpentine are often given. Morphine is used by veterinarians for hypodermic injections.

Antispasmodics.—Antispasmodics are agents that relieve spasms for cramps. Hot and cold applications, friction, liniments, counter irritation, and bleeding are frequently resorted to. The agents enumerated under anodynes are frequently used internally as antispasmodics.

Astringents.—Astringents are used to check bleeding, to reduce secretions, and to cause tissues to contract and condense. Chalk, alum, turpentine, boric acid, common salt, and iodoform are some common agents of this class.

Blisters. — Blisters are commonly spoken of as vessicants and counter irritants. Some blisters merely cause redness and a slight irritation; others are so powerful that they actually burn the flesh with which they come in contact.

Mustard, and tincture of iodine are examples of mild blisters; butter of antimony, lunar caustic, and caustic potash are examples of severe blisters.

ADMINISTRATION OF MEDICINES

In most cases medicines are either administered to domestic animals through the mouth or applied externally. Veterinarians occasionally resort to hypodermic injections, using for this purpose a syringe having a hollow needle. This procedure is often of value when immediate results are desired, or when on account of paralysis or other cause the animal is unable to swallow. It is also useful as a means of getting a drug into a specific locality in which it is required, as, for instance, the injecting of cocaine into the flesh previous to operations, or the injecting of vermicides into the windpipe to destroy worms. In addition to these methods of administration, some drugs are volatilized and animals permitted to inhale them.

Dosage. — The doses suggested in the following list of medicinal agents are those calculated to be given to adult animals. To small animals or to animals much weakened by disease or other causes reduced doses should be given. It should be noted that

ruminants, that is, animals that chew the cud, such as cattle and sheep, will take larger doses than will horses and swine. This is due to the fact that ruminants have four stomachs, and consequently a more extensive digestive system.

The dosage of a solid medicament is usually given in apothecaries' weight. The tables of apothecaries' weight and fluid measures given later on will be of assistance in this connection.

LIST OF COMMON MEDICINES

Acetic Acid: Occasionally applied externally for the removal of warts and abnormal growths.

Aconite, Tincture of: Frequently administered by veterinarians for fevers or inflammations. It is a powerful drug and should be avoided in case an animal is suffering from a weak heart or disturbance of the circulatory system. Dose, horses 10 to 20 drops; cattle, 20 to 30 drops; sheep, 10 drops; swine, 1 to 5 drops. External applications of this drug are sometimes made to relieve pain, but should be used sparingly.

Aloes: Extensively used as a purgative for horses. Dose, 5 to 8 drams. Should be administered in a ball or bolus, which may be procured from a druggist.

Ammonia water: Frequently given as a drench in case af acute indigestion, colic, bloating, and is also used as a stimulant. Dose, horses, ½ oz.; cattle, 1 oz.; sheep, 2 drams; swine, ½ to 1 dram. In all cases to be diluted with water .

Arnica, Tincture of: Is useful to promote sweating and reduce fever. Dose, horses, ½ to 1 oz.; cattle, 1 oz.; sheep, 2 drams; swine, ½ dram. Applied externally, tincture of arnica is useful in sprains, bruises, etc.

Arsenic, Fowler's solution of: Extensively used by veterinarians as a tonic for animals that are depleted in condition, also used in the treatment of heaves of horses. Dose, horses, 2 to 4 drams; cattle, 4 to 6 drams; sheep and pigs, 5 to 20 drops.

Belladonna, Fluid extract of: In cases of fever, colic, tetanus (lockjaw), it is believed to be a valuable agent. Dose, horses, ½ dram; cattle, 1 dram; sheep, 20 drops; swine, 3 drops.

Blue vitriol (copper sulphate): Used in the treatment of foot rot in sheep, also for application to wounds, on which it acts as an antiseptic and astringent. A solution of 1 oz. to 1 pt. of water is usually employed, but in severe cases a stronger solution may be applied.

Boric acid: A solution of 20 grains of boric acid to 1 oz. of water is useful in the treatment of sore or inflamed eyes, mouth, nostrils, etc. Such a solution is practically non-poisonous, yet it has considerable merit as a germicide and astringent.

Butter of antimony: A caustic used in the treatment of old sores, wire cuts, etc., in which proud flesh has formed. The material is applied undiluted by means of a swab. Must be handled with care and is never administered internally.

Carbolic acid: Crude carbolic acid in a 5% solution is a suitable disinfectant for use about barns, stables, pens, and for other purposes. May be applied with a sprayer or by scrubbing the surface with a broom or brush.

Pure carbolic acid (not crude), diluted with 30 parts of water is useful in the treatment of wounds, sores, scratches, etc., and is one of the most generally used disinfectants in veterinary medicine. The solution given is efficient for sterilizing instruments, which should be immersed in it for five minutes. Both the products mentioned are extremely poisonous, and their careless use or storage is frequently the cause of fatal accidents. It is, therefore, advisable to keep them in a compartment under lock and key, and take careful steps to prevent persons not familiar with their qualities from having access to them.

Calomel: An extensively used purgative and vermifuge. Dose, horses, ½ to 1 dram; cattle, 1 to 2 drams; sheep, or swine, 5 to 20 grains.

Castor oil: Purgative. Dose, horses, 1 to 2 pt.; sheep, 4 oz., swine, 2 oz.

Copperas (sulphate of iron): A valuable tonic and very often one of the constituents of condition powders. Useful for checking scours in pigs or calves. Dose, horses, 1 dram; cattle, 2 drams; sheep, 20 grains; swine, 10 grains.

Corrosive sublimate (bichloride of mercury): A powerful disinfectant and very poisonous. For external use only. Corrosive sublimate 1 part in 1,000 parts of water makes a solution that is suitable for use about livestock quarters, also for cleansing wounds and disinfecting prior to operations.

It attacks metals, consequently should not be used on instruments or in any place where it will come in contact with metal surfaces.

Coal-tar dips: A general class of proprietary disinfectant and insecticidal solutions that are on the market under different trade names. They are extensively used as dipping and disinfecting solutions for sheep, swine, and cattle, and if they bear the label of reputable manufacturers may be depended on for destroying skin parasites, when used according to directions. They are also useful for dressing cuts, scratches, surgical wounds, etc. They have the advantage of being practically non-poisonous, hence are much safer to use than carbolic acid or corrosive sublimate, and if of good quality they are undoubtedly just as efficient as disinfectants.

Epsom salts: Purgative. Useful for cattle and sheep, but not much used for horses. Doses, cattle, 1 to 1½ lb.; sheep, 2 to 4 oz.

Gentian root: Powdered gentian root is one of the most common ingredients of condition powders, and it has considerable merit as a bitter tonic. Dose, horses, 2 drams; cattle, 4 drams; sheep, 1 dram.

Iodine, Tincture of: Used externally to paint surfaces where a counter irritant is required; also in the treatment of skin diseases, such as ringworm. Application may be made once daily until the area becomes sore, when it should be discontinued for a time.

Jamaica ginger: Useful in many cases of intestinal disorders. Should be given in milk. Dose, horses, 1 oz.; cattle, 2 oz.; sheep, ½ oz.; calves and foals, ½ oz.

Kerosene and gasoline: Sometimes given internally for stomach worms. Lambs will take from 1 to 2 drams, larger animals a proportionate amount.

Laudanum: Given internally for the relief of acute pain such as is often present in colic; also useful in severe cases of intestinal disorders. Dose, horses, 1 oz.; cattle, 1 to 2 oz.; sheep, 2 drams; swine, 5 to 20 drops.

Lime water: Frequently given to young animals in case of diarrhea. Should be diluted with milk, using about 2 parts of milk to 1 part of lime water.

Linseed oil, raw: Extensively used as a purgative, also as a dilutent for mixing drugs that are too strong to be given undiluted. For purgative effects, 1 to 2 pt. may be given to horses; cattle, 2 to 3 pt.; sheep, ½ pt.

Quinine: A stimulant and bitter tonic. Dose, horses, ½ to 1 dram; cattle, 2 to 4 drams; sheep, ½ dram; swine, 10 grains.

Saltpeter (nitrate of potash): A favorite remedy for the treatment of kidney disorders, also useful in fevers. Dose, horses, 1 oz.; cattle, 1 to 1½ oz.; sheep, 2 drams.

Spirits of camphor: Will often afford relief from pain in colic. Useful in cases of dyspepsia and sometimes in respiratory troubles, coughs, and colds. Should be given in water. Dose, horses, 2 to 4 drams; cattle, 1 oz.; sheep, 2 drams; swine, 10 to 20 drops.

Sulphur: It is a common belief that feeding sulphur will tend to destroy skin parasites, but there is little evidence to support this belief. Dry sulphur dusted into the hair will often accomplish this result. Burning sulphur in a tight enclosure is useful in the treatment of hoose, or verminous bronchitis.

Turpentine: A standard remedy for colic. Useful in cases of bloating and for the destruction of intestinal parasites. Should be given in linseed oil or in milk. Dose, horses, ½ to 2 oz.; cattle, 2 to 3 oz.; sheep, 1 to 3 drams; swine, 1 dram. Turpentine is extensively used in compounding liniments.

Whiskey: A stimulant that is valuable in cases that require such treatment, as for example, sunstroke, chills, general depressions, or collapse. Dose, horses and cattle, 2 to 4 oz.; sheep and swine, 1 to 2 oz.

COMMON DISEASES

Abortion.—Contagious abortion, due to a specific germ, is somewhat common in cows, ewes, and mares. Cases should be at once isolated from other animals and the fetus and fetal membranes burned as they are likely to spread the disease. Disinfect quarters occupied by these animals and douche the womb with a 1% solution of coal-tar dip or a 2% solution of carbolic acid. Repeat douche daily and do not breed until all vaginal discharge ceases. A male may become infected by serving affected females, hence care must be used in selecting a sire.

If accidental abortion, due to injury, overwork, or undue excitement, is threatened, give the patient rest, quiet,

and, if necessary, small doses of laudanum.

Abscesses.—For an abscess, as a rule, a hot poultice is advisable until the abscess softens and pus collects. The abscess should then be opened and thoroughly cleaned with an antiseptic solution, such as carbolic acid. Repeat the cleansing daily or oftener if necessary. Apply lard or vaseline to the skin and hair about the abscess.

Actinomycosis. — Actinomycosis, or *lump jaw*, affects chiefly young cattle. It is due to a fungus that is usually taken in with feed. If the tumor is external it may be removed and the wound painted with tincture of iodine. Internally, give large doses of potassium iodine—some authorities recommend 3 drams daily until symptoms of poisoning are seen, when the dose should be reduced to 1 or 1½ drams or discontinued if necessary.

Anthrax, or Charbon.—Anthrax, or charbon, affects horses, cattle, and sheep and is transmissible to man. It is a dangerous disease, for which there is no satisfactory treatment. Affected animals should be destroyed and the carcasses burned or buried in quicklime. Premises occupied by such animals should be thoroughly disinfected or abandoned and all discharges from the bodies burned or buried with the carcasses. The utmost care should be observed in this work, since the disease is extremely infectious and usually fatal in man. A vaccine that is somewhat successful in rendering animals immune to the disease may be purchased from druggists.

Azoturia.—Azoturia is a disease that affects horses, particularly work horses, after a short period of idleness on full feed; it is often called *Monday-morning sickness* because of the frequent cases that develop after the animals have rested over Sunday on full feed. Treatment should consist of supporting the animal in slings if it is paralyzed, administering a purgative, and applying hot blankets. A qualified veterinarian should be called to administer hypodermic injections and give other necessary treatment. Light, succulent feed should be given until recovery is complete.

Barrenness, or Sterility.—Barrenness, or sterility, may affect breeding animals of any species. Reduction of flesh by restriction of diet and giving abundant exercise may correct the condition in overfat animals. Tonics and a liberal ration containing an abundance of nitrogenous feed should be given in the case of depleted animals. Barrenness in cows is sometimes corrected by injecting into the vagina a quart of warm water in which a cake of ordinary compressed yeast has been dissolved. The yeast should be dissolved a few hours before injection and the treatment repeated daily for 3 or 4 days. Some cases of sterility are due to causes that require surgical aid, in which emergency the services of a veterinarian are required.

Blackleg.—Blackleg is known also as *black quarter*, and as *symptomatic anthrax*, the latter term being applied for the reason that the disease somewhat resembles anthrax, but it should be understood that the two are distinct. Blackleg affects chiefly young cattle and its ravages are most pronounced among those that are fat and thrifty. It is most always fatal and no treatment is satisfactory. Cases should be destroyed and the carcasses treated as directed for anthrax cases. Vaccination with a protective vaccine that any stockman can administer is very successful in preventing the disease. Vaccine may be had in pill form at any drug store.

Cerebrospinal Meningitis.—Cerebrospinal meningitis is sometimes epidemic among horses and sheep. A layman can scarcely undertake treatment. If possible, a veterinarian who is familiar with the disease should be called.

Choking.—If an animal is choked the first efforts should be directed toward returning the obstruction to the mouth. If this is not successful, olive oil or castor oil should be given to lubricate the passage and thus aid in passing the obstruction to the stomach. Sometimes gentle massage of the exterior of the esophagus will assist in this. In some cases a piece of garden hose may be used to force the obstruction down, but great care is necessary or rupture of the gullet may result. In cattle severe bloating may follow a case of choking, in which case tapping the paunch as directed for hoven may be necessary. A surgeon

may be able to open the esophagus by an operation and remove the body.

Colic.—Colic is an extremely common disorder among horses. It is difficult to give specific directions for treatment, as there are various forms of the disease, due to different causes, and a treatment that is suitable for one is often entirely unsuitable for another. Good authorities recognize the following forms of colic: Engorgement colic, obstruction colic, tympanitic colic, spasmodic colic, and worm colic. Horse owners will do well to familiarize themselves with the different forms of colic and from this knowledge there will follow an ability to avoid many cases and to give simple treatment when a case makes its appearance. It is obvious that a satisfactory discussion of the causes, symptoms, and treatment of these various colics cannot be given here.

Constipation.—Many cases can be benefited if not cured by giving laxative feed, abundant exercise, and good care. Purgatives are often necessary, in which case aloes are usually given to horses and Epsom salts to cattle. Linseed oil or castor oil are often useful. It should be the aim to correct the condition that causes constipation; probably in most cases it will be found to be improper feeding.

Cough.—As a rule, cough should be regarded as a symptom of a disease rather than as a disease in itself. One of the first steps in treatment is to provide dry, comfortable, well-ventilated quarters. Turpentine, mustard, and other mild counter irritants applied to the skin of the neck and chest are often of service. Equine cough syrup containing agents that tend to relieve the irritation may be procured from druggists. Opium or heroin are sometimes administered by veterinarians in cases of violent or spasmodic cough.

Eczema.—Eczema is, in most cases, due to improper feeding, hence the first step toward treatment should be directed to the correction of this condition. A laxative should be given and the affected skin may be washed with tar soap and oxide-of-zinc ointment of icthyol applied.

Farcy.—See Glanders.

Foot-and-Mouth Disease.—Foot-and-mouth disease affects cattle, sheep swine, and goats. It is extremely infectious and no satisfactory treatment is known, hence immediate destruction of affected animals is recommended. The disease is rare in the United States and Canada, but occasional outbreaks occur, probably resulting from the importation of infected animals from foreign countries. Thorough disinfection of premises occupied by diseased animals is necessary and it is advisable to leave such quarters vacant for several months before placing healthy animals in them.

Foot Rot.—Foot rot is an infectious disease of sheep. Affected animals should be isolated and unaffected ones removed from pastures that may be infected. All affected animals should be compelled to stand for a few moments each day in a shallow tank or trough containing blue vitriol solution, or a 2% solution of coal-tar dip. In advanced cases, individual treatment should be given by removing diseased horn and applying pure carbolic acid or the latter mixed with 10 to 15 parts of glycerine, after which a bandage moistened with disinfectant solution should be applied.

Founder.—For founder, hot foot-baths and poultices of thermofuge or antiphlogistine are a favorite treatment. If the animal is shod, the shoes should be removed and a clean, dry well-bedded box stall provided. Bleeding and blistering are frequently practiced by veterinarians. In acute cases it may be advisable to cast the animal or place it in slings. Proper shoeing will often benefit chronic cases.

Foul in Foot.—The disease known as foul in foot is usually seen in cattle and is often due to animals being confined in wet, filthy quarters. A correction of this condition and the application of the remedies suggested for foot rot in sheep will usually bring about a cure.

Galls.—Galls are usually due to poor fitting of harnesses or chafing, and the steps first made should be to remove the cause. Galled surfaces should be cleansed and oxide-of-zinc ointment applied. Alum dusting powders are also often effective.

Garget.—As a treatment for garget the udder should be milked dry and massaged. Cloths wrung out of hot water or applications of camphor ointment procurable from any druggist are useful. In acute cases it may be well to support the udder by means of a wide bandage around the hips of the

animal. Some forms of garget are believed to be contagious, hence it is well to isolate all cases.

Gid.—Gid is a parasite disease of sheep, often spoken of as grub in the head. The only treatment consists of trephining the skull and removing the parasites, but the operation requires special instruments and skill in their use. Preventive measures such as avoiding infected pastures and destroying the heads of sheep that die of the disease are more satisfactory.

Glanders, or Farcy.—Glanders, or farcy, is an extremely contagious and practically incurable disease of horses, mules, and asses. Affected animals should be destroyed and premises carefully disinfected. The disease is transmissible to man, hence the work of destroying animals and disinfection should be done with great care.

Grease. — Grease, sometimes called *grease heels* or *scratches*, is a form of eczema affecting horses' heels. Some cases are believed to be due to filth or skin abrasions. The treatment suggested under eczema is often beneficial in early stages. The affected area should be clipped, cleansed, and a hot poultice applied. Carbolic acid and glycerine may then be applied as directed under eczema, the part bandaged, and the animal kept in a dry, clean stall well supplied with bedding.

Heaves.—Heaves are not curable but may be alleviated by moistening all grain or hay fed. An affected animal should not be watered immediately before exercise or work. Arsenic, iron, and strychnine are often given, but should be prescribed by a veterinarian.

HOG CHOLERA

(By Courtesy of Great Western Serum Co.)

Hog cholera is an acute febrile disease which affects only hogs, and which is characterized by extreme contagiousness and a very high death rate. The disease is found in practically all parts of the world, and is especially prevalent in the large hog-raising districts of the United States. The first recorded outbreak in this country occurred in the year 1833 in the State of Ohio. From the original center of infection the disease has spread to all portions of the United States. The United States Department of Agriculture estimates the losses of swine from cholera totaled $73,000,000 in one year. In one State alone the loss is placed at $4,000,000. While outbreaks occur at all seasons of the year, the great majority take place during the late summer and fall. The mortality from hog cholera is as high as 100 per cent in some herds, while the average is about 88 per cent, and many of the hogs which survive being weakened and stunted in growth are comparatively worthless, and as a rule are carriers of cholera for months following apparent recovery.

CAUSE OF THE DISEASE

The Germ Which Causes Hog Cholera.—Scientists have not been able to discover the specific germ or microbe which causes hog cholera. It has never been cultivated in laboratories, as has been done with many other infectious germs, and we know of it only by the effects which it produces. The germ is so small, or else of such structure, that it cannot be seen with the strongest microscopes available.

Predisposing Causes. — While hog cholera can be started in a herd only by introducing the germ which causes it, there are many factors which may render a herd more susceptible to the disease. Anything which tends to lower the health of the animals may be regarded as a predisposing cause. Among such predisposing factors there may be mentioned improper feeding, insanitary condition of hog lots, damp or cold or too crowded sleeping quarters, dirty drinking and feeding troughs, etc. Of course insanitary surroundings and poor feed cannot in themselves produce hog cholera, but they lower the vitality of hogs to such an extent that they become comparatively easy victims of any disease producing germs to which they are exposed.

Ways Hog Cholera Reaches a Herd.—The most dangerous factor in spreading hog cholera is the sick hog and the hog which has apparently recovered from the disease. The germ which causes hog cholera is always present in the bodies of sick hogs, and is thrown off from them in large numbers in the feces and urine, thus contaminating the yards and pens in which sick hogs are kept. Sick hogs may get onto a farm in various ways —by escaping from a neighboring herd, by the purchase of new stock which may show no symptoms of sickness until some days after pur-

chase, by returning show hogs to the herd after visits to fairs or stock shows, by purchase of hogs which have apparently recovered from hog cholera.

In addition to the danger of introducing the infection through the hogs themselves it must be remembered that the germ of the disease may be carried in a minute particle of dirt on the feet of attendants or neighbors who have previously visited farms where hog cholera exists. It may also be carried in this way by dogs, and by crows and other birds. The disease may be carried down stream from herds which are affected above.

After hog cholera has visited a farm, the lots, hog houses, feeding troughs, and implements used for cleansing have naturally become contaminated with the germs of the disease, and if new stock is placed in such yards after these were occupied by sick hogs the new hogs will more than likely contract the disease. Such premises should be restocked only after cleaning and thorough disinfection and then the safest plan is to place thereon only hogs which have been vaccinated against cholera.

SYMPTOMS OF HOG CHOLERA

The beginning of hog cholera in a herd is usually ushered in by sickness appearing in one or two hogs. Soon other hogs are affected and in a very short time all hogs exposed to the contagion are affected. In general the symptoms are sluggishness, disinclination to move, weakness, loss of appetite, a high fever, frequently cough, inflammation of the eyes with gumming of the lids, and there may be diarrhea. In advanced cases purplish blotches appear on the skin, especially on the surface of the abdomen, on the inside of the legs, and around the ears and neck. As a rule the progress of the disease is so rapid that the hog is not greatly emaciated before death; it is, in fact, quite common in acute outbreaks for hogs to die after being sick only a few days. In the chronic type they eat very little and lose flesh rapidly, finally becoming so emaciated and weak that they stagger and walk with an uncertain gait, the hind legs particularly appearing to be very weak. The eyes become inflamed and the lids may be gummed together. After a few days' illness there is usually a profuse diarrhea, and in these cases the hog may, and usually does, linger for several weeks, sometimes months, before it finally dies. It is extremely rare for such an animal to recover its health and vigor sufficiently to become of value to the owner.

PREVENTION AND TREATMENT OF HOG CHOLERA

General Preventive Measures. — It has been shown that in the vast majority of cases the germ of hog cholera is transported mechanically, in the bodies of sick hogs and on the feet of men or animals, including birds. It thus follows that the chances of an outbreak of hog cholera would be greatly lessened, if not completely avoided, if the herd could be safely protected from these carriers of infection. Under average farm conditions this is very difficult, and the best that can be hoped for is the lessening of the opportunity for infection by placing the herd on a part of the farm that will be the least accessible to men or animals from other farms. Hog lots should never be located near public roads if this can be avoided. All newly purchased stock should be kept separate from the main herd for at least thirty days.

In addition to protecting the herd by methods of quarantine, careful attention should be given to the general health of the herd. The hogs should be provided with clean, dry sleeping places, and the lots and feeding troughs should be kept clean. It is well occasionally to scatter slaked lime about the lots and to wash and disinfect the troughs.

After an outbreak of hog cholera the yards and pens should be thoroughly cleaned, all dead hogs should be burned, the litter should be collected and burned, and lime scattered freely over the ground. The sheds and hog houses should be washed and disinfected with three per cent solution of compound cresol (U. S. P.) Feeding troughs that have been used by sick pigs should be burned if made of wood, but if this is not practicable they should be scrubbed clean and thoroughly soaked with cresol solution, the latter being washed out before the troughs are used again.

Prevention by Inoculation.—Careful and persistent attention to general preventive measures, such as quarantine, disinfection, proper feeding, etc., on the part of farmers generally would

no doubt result in a material reduction in the yearly losses from hog cholera, and the importance of observing these precautions can not be overestimated. In view of the fact that it is impracticable to enforce general and completely effective measures to protect hogs from the various avenues of cholera infection most hog raisers now keep their hogs immunized against cholera by employing the serum preventive treatment. It should be remembered that the serum treatment is used especially as a preventive, and that little success can be expected in herds which are badly affected with hog cholera. An early application is essential, and farmers should notify their veterinarians immediately upon their hogs' becoming ill, so that they can be treated at once.

Properly prepared serum and virus scientifically administered insures absolute protection against hog cholera. In employing the serum vaccination against hog cholera it is considered highly desirable for the treatment to be applied by competent veterinarians who have had special training in this class of work.

Hoose.—Hoose is a parasite disease of calves and lambs, caused by worms in the bronchial tubes, hence it is *sometimes spoken of as verminous bronchitis.* Some cases are successfully treated by confining animals in a tent or a tight room and causing them to inhale sulphur dioxide, generated by burning sulphur on charcoal. There is imminent danger of suffocating the animals if they are kept too long in the gas, hence great care is necessary. In some cases an attendant remains with them and opens doors when he is no longer able to endure the gas. Veterinarians sometimes inject chloroform or turpentine into the windpipe by means of a hypodermic syringe.

Hoven, or Bloat.—Hoven, or bloat, is very likely to occur in cattle when they are allowed to overfeed, particularly on rank-growing forage such as clover or alfalfa. In early stages of the disease, a wooden bit or gag, retained in the mouth by means of light ropes over the horns will assist in getting rid of the gas that is accumulating in the digestive tract. A handful of salt placed in the mouth back of the gag will often make it more effective. A favorite remedy is 2 oz. of turpentine well diluted with milk or linseed oil. Other remedies are: common baking soda in 2-tablespoonsful doses as a drench, and Jamaica ginger in 3- or 4-oz. doses given as a drench, well diluted with hot water. In acute cases when bloating has become so severe that there is danger of suffocation or rupture of the paunch, tapping should be resorted to. Use a trocar and canula, inserting the instrument about half way between the point of the hip or what is often called the hook bone and the last rib on the left side of the animal and choosing the point where the swelling is most prominent. It is well to first make a hole in the skin with a knife. When the puncture has been effected the trocar is withdrawn and the canula allowed to remain in the opening. A pocket knife may be used if a trocar is not available, but with the former there is danger of making the incision too large.

Intestinal and Stomach Worms.—Intestinal and stomach worms are one of the most common parasitic disorders of domestic animals. Worms in the stomach or intestines interfere with nutrition, cause irritation and spasms, and may give rise to serious complications. Some of the different forms are tapeworms, roundworms, whipworms, threadworms, and pinworms. Common remedies for worms are turpentine, diluted with linseed oil, salt, copperas and santonin. It is always advisable to withhold feed for 24 to 48 hr. previous to giving worm remedies, and shortly after giving the drug a purgative should be administered. In obstinate cases a more specific treatment than can be outlined here and one that is particularly adapted to the specific parasite that is causing the trouble may be necessary.

Indigestion.—The usual treatment for indigestion is to give a purgative, followed by Jamaica ginger and a tonic, but special cases often require special treatment. If the indigestion is due to improper feeding, the cause should be obviated by feeding sparingly for a time, or even by withholding feed entirely.

Lice.—Lice are more or less common on all domestic animals. A good coal-tar dip is an efficient lice killer and may usually be depended on to exterminate the parasites if used in accordance with directions furnished by the manufacturer.

Maggots.—Maggots are frequently seen in wounds resulting from dehorning, castrating, and accidents. The treatment is to apply coal-tar dip, kerosene, or turpentine diluted with linseed oil.

Mange.—Mange is a parasitic disease caused by minute animal parasites or mites. It is common in sheep and cattle and is often called *scab* or *scabies;* it also affects horses and hogs. Some forms of mange are more resistant to treatment than others. Dipping in a reliable coal-tar dip is the most convenient and satisfactory remedy for small animals. The dip solution does not kill the eggs of the mites, hence the dipping should be repeated frequently if it is expected to exterminate the disease. If dipping is not practicable, local treatment with green soap, sulphur ointment, or carbolic acid in glycerine may be applied. The hair should be clipped and scabs softened before application in order to secure the best results. Infected quarters should be thoroughly sprayed with coal-tar dip solution to destroy parasites that may be harbored there.

Milk Fever.—Milk fever affects chiefly dairy cows that are heavy milkers. Purgative of epsom salts may be given early in the disease, but if paralysis has set in, medicine administered by the mouth is likely to cause strangulation. The affected cow should be propped up to a comfortable position with bags of straw, and ice or cold water applied to her head and spine. Oxygen gas injected into the udder is a treatment that is now used very extensively. If oxygen cannot be procured, pumping the udder full of air by means of an ordinary bicycle pump and a milking tube may be resorted to.

Navel Ill.—Navel ill is an infectious disease of the joints. It occurs in foals and sometimes in the young of other animals soon after birth, and is due to the entrance of germs through the navel opening. Prevention consists in keeping the dam in a clean, dry, sanitary stall, and in bandaging the navel of the young as soon as it is dropped. Treatment after a case has developed is seldom successful.

Quarter Crack and Sand Crack.—When a horse is affected with quarter cracks or sand cracks a blacksmith may draw the parts of the hoof together with a carefully fitted shoe, or by means of nails. Tar should be applied to exclude dirt from the crevices.

Rabies.—Rabies affects all animals and is transmissible to man, in the latter case being known as hydrophobia. There is no satisfactory treatment of rabies in animals. On account of the imminent danger of spreading the disease, it is advisable to destroy affected animals at once. However, in case what is thought to be a rabid animal, as a mad dog, is at large in a community and bites animals or persons it is always advisable to preserve the life of the supposedly rabid animal until a diagnosis can be made to determine whether or not rabies is actually present. This precaution is particularly important in case persons are bitten.

Rheumatism.—Rheumatism affects horses, cattle, pigs, and goats. Treatment is not very satisfactory. Clean, dry quarters and good, nourishing feed will go a long way toward preventing the disorder and will often bring about marked improvement in cases already developed. Enlarged, stiffened joints may be rubbed with iodine ointment. Veterinarians are sometimes able to fire and blister affected parts with good results.

Rickets, or Rachitis.—Rickets, or rachitis, is common in young pigs and is believed to be due to improper feeding of the dam. Treatment should be directed toward correcting the diet and providing clean, dry, sanitary quarters. Liquid feeds, such as gruels, are particularly useful.

Ringworm.—Ringworm attacks horses, cattle, sheep, goats, and swine. The disorder is due to a fungus growth. Painting with iodine or a strong solution of coal-tar dip will usually destroy the parasite. Occasionally man acquires ringworm from animals, hence due precaution should be taken in treating cases. Animals transmit the disease to animals of the same species, but it is said that cattle seldom acquire it from horses or vice versa. It is always desirable to isolate cases of ringworm and disinfect the quarters they have occupied. Green soap, boracic acid, and turpentine are other remedies that are frequently used.

Scab in Sheep.—See Mange.

Scours.—Scours affects chiefly newly born animals. Linseed oil will often assist in a freeing of the intestinal tract from irritating material. Laudanum is useful to relieve pain. Lime-

water is a favorite remedy with many stockmen. See that feed is clean and wholesome and milk pails or troughs are sterilizied for each feeding.

Sunstroke.—Apply ice or cold water to the head and along the spine. Bleeding is not advisable. A stimulant such as whiskey is often given in these cases. Many authorities consider it inadvisable to drench animals over the entire body with a hose or by throwing pails of water on them. Many cases of sunstroke in horses may be prevented. During periods of intense heat, provide a head covering and place in this a sponge moistened with cold water. Frequent watering is also a safeguard.

Swine Fever.—See hog cholera.

Tetanus, or Lockjaw.—Tetanus, or lockjaw, is an extremely contagious disease and a dangerous one because of the fact that it is easily transmitted to man. As a general rule, treatment for the disease is useless, although good results have been reported from the use of serum. When there is reason to suspect that an animal will develop tetanus because of infection from a wound, an immediate use of the same serum, known as antitetanic serum, is successful in preventing the disease in a large majority of cases. A qualified veterinarian should be employed to administer the serum. A wound that is suspected to contain tetanus germs should be open and cleaned out so that every part of it will be exposed to the air, as the germs of tetanus do not thrive under these conditions. Pure carbolic acid may be used to clean the wound.

Texas Fever.—Texas fever is a virulent disease in the southern part of the United States. It is caused by a minute animal parasite that lives in the body of the Texas fever tick or more properly the splenetic fever tick. Hence, efforts should be made to exterminate the latter pest. The method of immunizing cattle against the disease has been developed and used somewhat extensively. No satisfactory treatment is known, and it is often advisable to destroy affected animals and free the other ones from ticks by dipping or spraying and remove them to new pasture.

Thrush.—Thrush affects the frogs of horses' hoofs. Treatment consists in placing the animals in clean, dry quarters and cleaning the foot and applying a healing powder such as calomel and iodoform, equal parts. In some cases it may be necessary to cauterize the affected part, for which purpose butter of antimony applied with a swab is effective. Afterwards a dressing of tar and a bandage over the foot will serve to exclude dirt and permit healing.

Tuberculosis. — Tuberculosis affects all domestic animals. There is no satisfactory treatment for this disease, but every effort should be made to stamp it out by destroying the affected animals or at least isolating them and abstaining from the use of any products from them. A discussion of the additional measures for the control of this disease is impossible in this space. Consult a state veterinarian or board of health.

DOSES OF DRUGS FOR FARM ANIMALS

Drugs	Horses	Cattle	Sheep	Hogs	Dogs
Acetanilid	1–2 dr.	2 dr.	.5–1 dr.	.5–1 dr.	3–7 gr.
Aconite tincture	10–30 dp.	20–30 dp.	10 dp.	5 dp.	1–3 dp.
Alcohol (see Brandy)					
Aloes	5–8 dr.	1–1.5 oz.	2–4 dr.	2–4 dr.	15–20 gr.
Alum	2–4 dr.	3–4 dr.	40 gr.	40 gr.	15 gr.
Ammonia water	.5 oz.	1 oz.	2 dr.	1 dr.	.5 dr.
Ammonia aromatic	1–2 oz.	2 oz.	1–2 dr.	1–2 dr.	20–60 dp.
Aniseed	1 oz.	1.5 oz.	1–2 dr.	1 dr.	15 gr.
Areca nut	.5–1 oz.	1 oz.	1–3 dr.	2 dr.	1 dr.
Arnica tincture	.5–1 oz.	1 oz.	2 dr.	.5 dr.	7–20 dp.
Arsenic (Fowler's solut'n)	2–4 dr.	5 dr.	5–20 dp.	5–20 dp.	1–5 dp.
Asafetida tincture	2 oz.	3 oz.	.5 oz.	2 dr.	1 dr.
Atropine	1 gr.	1–2 gr.	.07 gr.	.07 gr.	.03 gr.
Belladonna fluid extract	.5 dr.	1 dr.	20 dp.	3 dp.	1 dp.
Boracic acid	1–3 dr.	3 dr.	20 gr.	15 gr.	8 gr.
Brandy	2–4 oz.	4 oz.	1–2 oz.	1–2 oz.	1–4 dr.
Buchu	1–2 oz.	.....	.....	.....	5–20 dp.
Caffein	7–15 gr.	.....	.....	.....	2 gr.
Calcium phosphate	2–4 dr.	1 oz.	1–2 dr.	1–2 dr.	5–20 gr.
Calomel	1 dr.	1–2 dr.	5–20 gr.	5–20 gr.	1 gr.
Camphor spirit	2–4 dr.	1 oz.	2 dr.	15 dp.	10 dp.
Cannabis indica extract	1–2 dr.	.....	.....	10–15 dp.	¼–1 gr.
Cantharides	5–20 gr.	5–20 gr.	4–8 gr.	4–8 gr.	1–2 gr.
Capsicum	20–60 gr.	1–2 dr.	.....	.....	1–8 gr.
Carbolic Acid	.5–2 dr.	1–2 dr.	10–20 dp.	5–15 dp.	3–8 dp.
Carbon bisulphide	2–4 dr.	.....	.....	.....	.....
Castor oil	1 pt.	1 pt.	2–4 oz.	2–4 oz.	1–2 dr.
Catechu	.5–1 oz.	1–2 oz.	.....	.....	5–30 gr.
Chalk	.5–2 oz.	2 oz.	1–2 dr.	1 dr.	.5–1 dr.
Charcoal	1–2 oz.	1–2 oz.	2–4 dr.	2–4 dr.	20–60 gr.
Chloral hydrate	1–2 oz.	1–2 oz.	1–2 dr.	1–2 dr.	5–20 gr.
Chloroform	1–2 dr.	1–2 dr.	25 dp.	20 dp.	10 dp.
Cocaine	5–10 gr.	10 gr.	.....	.....	⅙ gr.
Cod liver oil	2–6 oz.	3–8 oz.	3–8 dr.	2–6 dr.	1–3 dr.
Copperas	1 dr.	2 dr.	20 gr.	10 gr.	.....
Copper sulphate	2–4 dr.	2–4 dr.	20–30 gr.	20–30 gr.	1–2 gr.
Creolin	1–2 dr.	2 dr.	.....	.....	1–5 dp.
Croton oil	15–25 dp.	.5–1 dr.	5–10 dp.	5–10 dp.	1 dp.
Digitalis	10–50 gr.	10–60 gr.	5–15 gr.	5–10 gr.	2 gr.
Dover's powder	.5–1 oz.	.....	.....	.....	5–10 gr.
Epsom salts	.5–1 lb.	1 lb.	1–4 oz.	1 oz.	1–4 dr.
Ergot	.5–1 oz.	.5–1 oz.	1–2 dr.	1–2 dr.	1 dr.
Eserin	1–3 gr.	2–3 gr.	.....	.....	.....
Ether	.5–1 oz.	1 oz.	2–4 dr.	2–4 dr.	25 dp.
Fenugreck	1–2 oz.	2 oz.	2–3 dr.	2–3 dr.	15 gr.
Fowler's Solution (See Arsenic)					
Gentian	4–8 dr.	3 dr.	1–2 dr.	1–2 dr.	40 gr.
Ginger	2–8 dr.	5–8 dr.	1–2 dr.	15–60 gr.	5–20 gr.
Glauber salts	.5–1 lb.	1–1.5 lb.	1–4 dr.	.....	.....
Glycerine	2–5 oz.	3–5 oz.	5 dr.	4 dr.	1 dr.
Hydrastis	2–8 dr.	2–8 dr.	1–2 dr.	1–2 dr.	5–40 dp.
Hydrochloric acid	1–3 dr.	2–3 dr.	10–30 dp.	10–20 dp.	5 dp.
Hyoscyamus	.5–1 oz.	1 oz.	.....	.....	10 gr.
Iodide of potash	.5–2 dr.	1–2 dr.	10–25 gr.	5–20 gr.	2–8 gr.
Ipecac	1–2 dr.	2–4 dr.	1 dr.	.....	1–2 gr.

Doses of Drugs for Farm Animals—Continued

Drugs	Horses	Cattle	Sheep	Hogs	Dogs
Iron sulphate	1–2 dr.	2 dr.	25 gr.	25 gr.	4 gr.
Jaborandi	2–4 dr.	4 dr.	1 dr.	1 dr.	5–50 gr.
Jalap	.....	.....	.....	2–4 dr.	1–2 dr.
Jamaica ginger	1 oz.	2 oz.	.5 oz.	.....	.....
Kerosene	.....	.....	1–2 dr.	.....	.....
Kino	.5–1 oz.	1–2 oz.	1–2 dr.	1–2 dr.	5–25 gr.
Kousso	.....	.....	.....	.....	.5–4 dr.
Lard	.....	8 oz.	5 oz.	.....	.....
Laudanum	1–4 oz.	2–5 oz.	1–4 dr.	1–2 dr.	20 dp.
Lead acetate	1 dr.	1 dr.	25 gr.	20 gr.	1–2 gr.
Lime water	4–5 oz.	4–6 oz.	2 oz.	.....	1–8 dr.
Linseed oil	.5–1 pt.	1–2 pt.	6–12 oz.	5–10 oz.	1 oz.
Magnesium sulphate (see Epsom salts)					
Male fern, fluid extract	3–6 dr.	4–6 dr.	1–2 dr.	1–2 dr.	15–40 dp.
Morphine	3–10 gr.	5–10 gr.	1–2 gr.	¼–½ gr.	.02–⅓ gr.
Mustard	.5–1 oz.	1 oz.	1–2 dr.	1–2 dr.	20 gr.
Nitre	1–2 oz.	2–3 oz.	1 dr.	1 dr.	5–20 gr.
Nux vomica	1–2 dr.	2 dr.	30–40 gr.	10–20 gr.	1–2 gr.
Olive oil	1–2 pt.	1–2 pt.	.....	.....	2–4 oz.
Opium (powdered)	1–2 dr.	2 dr.	6–25 gr.	5–20 gr.	1–5 gr.
Pepper	1–3 dr.	2–4 dr.	15–25 gr.	10–20 gr.	4–10 gr.
Peppermint oil	15–30 dp.	30 dp.	.....	.....	1–5 dp.
Potassium bromide	1–2 oz.	2 oz.	2–4 dr.	2–4 dr.	5–50 gr.
Quinine	15–60 gr.	1 dr.	5–10 gr.	5–10 gr.	1–2 gr.
Rhubarb	1–2 oz.	1–2 oz.	1 dr.	1 dr.	5–10 gr.
Salol	.5–4 dr.	.....	.....	.....	1–3 gr.
Salts (see Epsom and Glauber)					
Saltpeter (see Nitre)					
Soda	1 oz.	2 oz.	.5 oz.	2 dr.	20–50 gr.
Spanish flies (see Cantharides)					
Strychnine	.5–2 gr.	2–3 gr.	¼–1 gr.	.....	.01 gr.
Subnitrate of bismuth	1–2 dr.	2 dr.	10–30 gr.	5–20 gr.	3–10 gr.
Sulphur	2–4 oz.	3–4 oz.	1–2 oz.	1–2 oz.	1–4 dr.
Turpentine	1–2 oz.	2 oz.	1–4 dr.	1 dr.	20–50 dp.
Whiskey (see Brandy)					

In the above list of doses, oz. stands for ounce; pt. for pint; lb. for pound; gr. for grain; dr. for dram; dp. for drop. Fractions are expressed thus: ½, or by decimals, thus: .5. Other figures show limits of small and large doses.

THE CAPPER SERVICE BUREAU

How often have you faced the making of a decision with respect to your livestock; your home; investment; lawsuit; your health; your farm; or kindred questions; and wished that you might have the advice of "a man who knew"? Such advice is now available through the Capper Service Bureau. Your subscription to the Kansas Farmer and Mail and Breeze or Capper's Weekly and the Directory entitles you to membership in the Bureau for the period through which your subscription runs. During that time you are at liberty to ask as many questions, and as frequently, as you wish, with the assurance that your request will have prompt and thorough attention.

A brief summary of the scope of the Bureau is outlined below:

Buying and Breeding Pure Bred Live Stock:

Do you know the real value of the animal you are purchasing. Is the breed suitable to your section of the country? Do you know why animals which have passed the tuberculin test at the point of shipment may show themselves tubercular when they are tested on arrival?

An individual may have a pedigree as long as itself and still be of a scrubby type.

Dairying:

Feeding and Breeding Dairy Cattle, Handling Milk, Cream, Butter.

The best dairy authorities in the Agricultural colleges of Missouri, Kansas, Nebraska, Oklahoma, and Colorado are at your service in questions of this nature.

Orchards and Gardens:

Are you putting in your own supply of apples, peaches, small fruits, vegetables, etc., for winter use or are you paying the town grocer a top notch price for these foods as you need them? An orchard and a garden is an excellent method of combatting the High Cost of Living.

Poultry:

Another blow at the H. C. of L. and a source of pride and enjoyment for the women folks. Fresh eggs, and plenty, mean better health; and, too, fried chicken is a welcome relief from the ordinary routine menu of beef, pork and mutton.

Household Management:

A department for the housewife and mother. Good health depends on well-balanced proper food rations and good pure drinking water. Is your boy or girl getting an even break in this respect? Some day they will face the world to make or break. Are you doing your part in giving them the proper start?

Does your work run smoothly? Are you availing yourself of every opportunity to lessen your steps and make the daily round of chores easier?

Health:

Some men will pay thousands for an animal and hundreds more for its upkeep. Its food is closely watched and properly rationed. When sick it is doctored by skilled veterinarians. But when it comes to the children, a dollar bottle of Dr. So-and-So's Cure-all suffices. Sad, but true. And yet that same man would fight you if you told him he was a potential murderer.

Or, let us put it another way. He still buys his high priced stock and spends his money in looking after their welfare. He himself needs medical attention but he feels he can't afford it! Self-murder is unlawful and if he were to attempt it in a public place it is more than likely he would be jailed. And yet that is just what he is doing. Unfortunately, he cannot be made to desist; but he is not only doing himself and his family an injustice but the community as well. As a breeder of purebred stock he is doing a meritorious work; he is an asset of the community.

The foregoing paragraph does not mean that the medical treatment of livestock is to be ignored. Far from it. That is a very important item in the plan of the Service Bureau. Only too often good grade or purebred stock is sacrificed on the altar of quackery for lack of advice. Most advertisements read well. But every breeder of stock or poultry should get acquainted with the many worthless nostrums on sale everywhere.

Investments:

Wasn't it only last week that the smooth-talking persuasive stranger was around with that oil stock which was to pay a marvelous dividend in a few weeks. And how ridiculously low the price per share was. Maybe you bought and maybe you didn't. But if you had known Tom Smith over in the next county, and could have talked with him Tom might have told you something about the persuasive gentleman. You didn't though and perhaps you're out five hundred or more. Now, as a member of the Service Bureau you would have had a prompt and reliable report on the investment, and have saved yourself a large amount of worry over your financial loss.

Claims:

It's just three years since that promising heifer got onto the tracks of Rattle & Bang R. R. and suffered extinction in a head-on collision with one of their freight trains. Or was it a fine crop of hay that was fired by a spark from one of their engines? Red tape—three years of it—and the loss still remains unpaid. How much postage have you spent in trying to get an answer? What has been the wear on your nerves in the heated soliloquies you have indulged in every time you thought about it? The Service Bureau will be glad to handle it or any other claim for you.

Law:

Friendships of long standing are sometimes broken up through a misunderstanding of the law. Why not let an impartial authority decide your rights and those of your neighbor basing that decision on the findings of the courts in similar cases. Questions of inheritance, lease holds, crop rights, fences, etc., are almost daily occurrences.

Farm Engineering:

One of the greatest factors in health-making is the assurance of proper drainage on the farm. Let our Farm Engineering Department solve your problem for you. Or, if it be a question of the care and repair of the binder, the tractor, the motor car or of lighting for the house or motive power for pumps, feed grinders, churns, washing machines, or the gas engine itself, our service is at your disposal for as many questions as you care to ask.

General Information:

The past few years have seen a closer acquaintance springing up between the ordinary reader and the world in general, and particularly the old world. Naturally, press reports are cut to the bone and complete explanation of all the terms used is not made. Questions arise as to the meaning of party names, such as Sinn Fein or Bolshevik, or the exact location of places, as the Ruhr

Basin or the coal fields of the Saar Valley. All read that Hungary is being divided. Perhaps your interest in the reason why a certain piece goes to Roumania and another to Czecho-Slovakia and a third to Jugo-Slavia goes unsatisfied because you can find nothing that will explain the cause. Let us tell you.

The United States may have a mandate in Armenia. What and who are the Armenians. Did you know that this impoverished handful of people are the living representatives of what was once a highly cultured race which boasted as great a degree of civilization as the world has ever known?

Or, our own country, for instance. So much happens in so short a time that unless one has ample time to read thoroughly and carefully, it is impossible to keep posted. That is where the Service Bureau can help you. Ask your questions and they will be answered promptly.

Nor is our effort confined solely to national and international politics. Astronomy, geology, or any of the branches of science; the field of sports; summer tours; anything and everything will be answered.

As said before, the only requirement for membership in the Bureau is that you be a subscriber to the Kansas Farmer and Mail and Breeze or Capper's Weekly and the Directory.

CERTIFICATE OF MEMBERSHIP

This certifies that.....

is a member in good standing of **The Capper Service Bureau**, and is entitled to the full service of the Bureau without charge for the period through which his subscription to the Kansas Farmer and Mail & Breeze, or Capper's Weekly, or both, runs.

THE KANSAS FARMER AND MAIL & BREEZE

SEDGWICK COUNTY FARM BUREAU

The work of a county farm bureau is largely educational, and the value of the work of the Sedgwick County Farm Bureau as a public service institution of the farmers, headed by their officers and the County Agent, is rather difficult to measure in dollars and cents, or to sum up so that the average person will have a 100 percent information of its workings.

The Sedgwick County Farm Bureau has been in active operation with the leadership of a County Agent since June 15, 1918, when it secured the services of E. J. Macy from the bureau in Montgomery county, where he had been employed for over five years. Notwithstanding that the organization was new and untried, it has proven to be the organization which is helping the farmer in solving his many problems.

The primary purpose of the county farm bureau is to find and secure the use of methods that will increase the profits of the farms. If by the use of some new variety of grain, or by some new method of cultivation, it can be made to yield a larger return, the cost of Production is reduced. If pure bred livestock replace the scrubs now kept on the farm, butterfat, beef and other animal products are produced more economically and the cost of production is therefore lessened. Also the study of market conditions that will improve the system of distribution of farm products, thus securing a more reasonable price to the producer, helps decrease the cost of production.

The farm bureau also cooperates with other organizations in solving the social and economic problems in which agriculture is directly interested. With the problems of school, church, farm labor, the migration of the young folks to the cities, and the general unrest and radicalism in the country today, the farmer is looking to the farm bureau to help him solve his many problems, and rural improvement which is so much desired is becoming more and more a part of the farm bureau program.

Aside from the social problems with which the farmer must contend, is the help he is getting through the practical demonstrations in actual farming principles. The County Agent is kept busy all the time in the field, helping, advising, demonstrating methods of actual work along all lines of farm activities, thus by his experience helping the farmers to become prosperous, and teaching them how to increase their profits, and it is the business of the bureau to bring quickly such information as will help the farmer. The services of the County Agent are free to the poorest farmer as well as to the richest, and he should be called upon whenever in need of information. The County Agent is giving all his time to secure needed information for those who are too busy to hunt it for themselves. The bureau has for its business to bring quickly into the hands of the farmer such information as is available at the state experiment stations

and the Agricultural Colleges, and to be gathered from experiences of those farming in the county.

Sedgwick county, through its Farm Bureau, has brought about many improvements in livestock, grain and dairy problems, some of which are listed here. The County Farm at the suggestion of the County Agent is now in possession of some very fine pure bred Holstein cows, and the standard of all dairy herds has been raised. Kanred wheat was introduced into the county last year and made such good results that over 20,000 acres were sown on 500 frms last fall. A Holstein Corporation was started in the county and will undoubtedly prove a success. These and many more improvements along livestock lines are the results of the benefits secured through the farm bureau. A Seed and Livestock List was published by the bureau and a poultry list kept, and the county today boasts of more purebred stock than ever before. More farmers are thinking about the purity of the seeds they sow, and the pedigree of the livestock they buy than they have in former years, and today nearly every farmer has pure bred livestock or seeds of tested purity for sale or exchange.

The Farm Bureau is new in Sedgwick county, but with the splendid interest manifested so far, the success of the farm bureau is assured, and the farmers of Sedgwick county will countinue to buy and breed pure bred stock, thus increasing their profits, and raising the standard of livestock in other counties of the state. The Scrub has had its day; the Pure Bred has come; and better livestock means better farmers.

The Sedgwick county farm bureau has over 1100 members at the present time, which speaks for the interest farmers are taking in the farm bureau movement. They are continuing to keep up this interest because it means better increase in production and profits than by the former methods of farming. The Farm Bureau stands for all that is best in Agriculture.

THE CAPPER POULTRY, PIG AND CALF CLUBS

ONE MAN TOOK an interest in me. I made up my mind then that I would help boys if I ever had the chance, and I take more pleasure in helping boys and girls than in any other other activity of my life."

These words, spoken by Arthur Capper to Capper Calf Club folks at their annual banquet in Topeka, contain the motive which prompted the founding of the Capper Clubs. Club work too often has been of assistance only to those who already were in position to advance. It remained for Arthur Capper, then governor of Kansas, to originate the idea of giving deserving boys and girls an opportunity to obtain a start with pigs and poultry which would enable them to make their own way. Membership in the Capper Clubs of course was not limited to those desiring such help, but was open to all who wished to take up the work. The Capper Pig Club was founded in 1916 with a membership of one boy to every Kansas county, but was increased to five boys in 1917 and 10 boys in 1918. The Capper Poultry Club admitted five girls to every Kansas county when it was founded in 1917, but later increased the membership to equal that of the pig club.

Stock entered in the Capper Clubs must be purebred, and it scarcely is possible to estimate the value of such an addition of purebred pigs and poultry to Kansas farms. Contest work has been made as simple as possible, yet it provides most valuable training to the members. These boys and girls lay the foundation for future accurate bookkeeping systems on their own farms by learning to keep records of feed, cost of production and profits in club work.

Many new features have been added to the Capper Clubs as the work has progressed. One of the most interesting and successful is the father and son department of the pig club. The boy enters a sow and litter in the active contest, while "dad" keeps records on the entire farm herd. Fathers are accepted as active members in every way, and in many instances "dad" has been won over to purebred swine. A similar department in the poultry club is the mothers' division. Farm flocks are entered and a special set of prizes is given. Altho it has not been compulsory for mothers to enter standard bred chickens, the influence of the girls' work in the club has made a great difference in the farm flocks, and in many instances crossbreds are being culled out gradually and their places filled by standard bred chickens.

A special feature of the pig club is the mutual insurance plan. Members who lose sows thru no fault of their own are paid an average valuation for their loss. Protection on contest sows extends from the time they are entered in the contest to six weeks after date of farrowing. A fund from which to pay losses is made up by assessments paid by all active members.

There is no more important part of club work than the breed clubs, which are composed of members breeding the same kind of pigs or chickens. Officers

are elected and organization work carried on. Every fall a sale catalog is issued in which club members list stock. More than 1,000 pigs and 3,500 chickens were listed in the catalog for 1919.

Kansas boys and girls are good business men and women. A glance at their work is sufficient proof. Fully 2,000 pigs made up the contest litters of pig club members for 1919 while poultry club girls have added 31,350 chickens to the poultry production of Kansas. The boys showed an average net profit of $163 in 1918 while the girls reported a net profit of $68.50. Under adverse conditions, pig club members made an average net profit of $126 in 1919, and the Poultry club $64.

While business training, production and profits are features in club work, the social side is equally as important. As soon as time for enrollment is past, county leaders are appointed and regular county meetings are held thruout the contest year. Every year, during Kansas Free Fair week at Topeka, a pep meeting is held to which all club members and their folks are invited. At the annual banquet in 1919 a club representation of 400 was present. The value of the social side of club work is well summed up in the words of one boy: "Before we joined the Capper Pig club we were bounded in our views by our community. After we joined the club we became interested in the entire county. At the pep meeting in Topeka, we met boys and girls from all over the state, giving us a still broader outlook."

The most recent addition to the Capper Club organization is the Capper Calf Club. First announced in January, 1920, it has met with an enthusiastic welcome by Kansas boys and girls. Senator Capper's purpose in organizing this club was to give an opportunity for the farm youth of the state to obtain a start with a high class of cattle, just as they now start with pigs and poultry. Future plans for the calf club look toward taking these boys and girls with their contest entries thru the years of growth of the calves to the time when the calves will be heifers with calves of their own. Probably at that time a cow club will be formed for the purpose of having better dairy and beef cattle. The Capper Calf club is meeting the support from the breeders of the state that it merits.

In addition to the clubs in Kansas, the Capper Clubs now have membership in 14 states. John F. Case is director of all club work for Arthur Capper, while Bertha G. Schmidt is secretary of the Capper Poultry Club, and Earle H. Whitman, manager of the Capper Pig Club. Complete information in regard to the Capper Clubs may be obtained by addressing Director of Club Work, Capper Building, Topeka, Kansas.

BINDER TROUBLES AND ADJUSTMENTS

By C. O. Reed

TO HAVE to await the services of an expert when every minute of the harvest days is money is not only an expensive practice, but in most cases is an unnecessary one if the operator will only use patience and good judgment and try to understand a few very simple principles of what seems a complicated machine. The purpose of this article is to aid the operator in his most common binder troubles. To cover the ground in the most logical and concise manner, let us consider troubles under the three general heads: general binder troubles, binder head troubles and knotter head troubles.

Starting. If possible, start the new machine on a road or in a pasture before going into the grain field. Use plenty of kerosene and run the machine empty for about five minutes, taking notice that every duct to bearings and every oil hole is open. Then apply lubricating oil. When you are ready to enter the grain with a new machine, raise the machine well up, tilt the platform forward; open the throat of the machine by throwing the butt adjuster forward and start in with about one-half of a full swath. After five minutes work the machine is ready for maximum results. If compelled to make a full swath at the start, cut the grain extra high.

Never change the adjustment of a new binder head before going into the field. It may miss a few bundles at first, but do not adjust. Apply a liberal amount of coal oil to the knotter head and the trouble will usually disappear.

New Machine Failing to Start. Occasionally a new machine fails to start due to some part sticking or catching. Throw the binder out of gear and see that the bull wheel revolves without catching. Remove the elevator chain and throw in gear. This will test the sickle. Next put on elevator chain and throw off reel chains. This will test the rollers. Then connect and test the reel. This method will test one part at a time and should locate the trouble without difficulty. In testing out head for failure to revolve, operate head by hand at back of machine through shaft which drives head from elevator chain.

General Binder Troubles

Chains. Undue wear in chains may be caused by the chain being run too tight or backwards. Run the chain with the hooks of the links leading and with the openings of the hooks out. The use of oil or grease on chains, if the binder is being run in a sandy country or under dusty conditions, is not to be recommended, for the oil will collect the fine particles of grit and cause excessive wear. Under such conditions use dry graphite. Chain jumping is caused by the chain being too loose or by the sprocket being badly worn. If a worn sprocket is the cause for the trouble a new one will have to be supplied.

Canvas Troubles. The creeping of canvases is caused by running them too loose or by the elevators not being square. Test the elevators to see if they are square by means of measuring the diagonals, and then square by the special apparatus to be found for that purpose. Have the canvases of the same tightness on both sides.

Canvases not elevating the grain may be caused by missing slats or loose canvases. Broken slats are generally caused by the elevators not being square, or by the canvases not being buckled evenly and thus the slat is forced to pass over the roller at an angle to it. Chewed slats may be caused by a projecting bolt or the canvas guides being out of shape.

Heavy Draft. Heavy draft may be caused from lack of sufficient good lubricating oil, bull wheel being entered in quadrant wrong; chains, especially main drive chain, being too tight; paint or varnish not being cut out of the bearings; or rollers binding. Apply lubricating oil to the bearings. Enter the bull wheel in the quadrant square. Have the proper tension in the chains. Coal oil will cut the paint or varnish from bearing surfaces. When machine is empty, operator should be able to move elevators by hand on elevator chain.

Sidedraft. Sidedraft in a binder refers to such resistance of the platform

end of the machine as to cause a "dragging" of platform, and hence results in a tendency to run the machine into the grain. It may be caused by (a) grain wheel bearing too light; (b) grain wheel being out of proper adjustment; (c) sickle parts not cutting properly, resulting in a pulling off of stalks rather than cutting; (d) very light grain may give a condition where sidedraft is more noticeable, and (e) a fast horse on the outside may lead the operator to believe he has sidedraft.

Remedies. (a) See that grain wheel revolves freely and perfectly on axle. If axle, bearings and wheel bell are badly worn, replace. (b) The inexperienced operator cannot tell whether a grain wheel is aligned properly or not. It should lead out of the grain slightly, and in case of poor alignment here, an expert must be called. (c) Obvious. (d) Sidedraft here is an advantage rather than an objection for it indicates the best construction. (e) Put fast horse on inside.

If difficulty is experienced in getting far enough into the grain with a tongue truck attachment, make adjustments to increase the angle between the platform and tongue proper, i. e., without changing position of machine make adjustments to let horses away from grain slightly. If machine runs too far into grain, make adjustments to bring horses a little closer to grain line. These adjustments can be found between tongue and stub tongue on the McCormick and Milwaukee binders, and in the truck axle braces on the Deering. If sufficient adjustment is not provided in the Deering to permit a full swath, turn the tongue over.

Badly Shaped Bundles in good grain are caused by improper manipulation of binder parts. Set the heel to strike straws about two inches below the heads. Run the butter as near at right angles to the rollers on tier shaft as possible, even if you have to sacrifice an inch or two in the position of the band on the bundle. Do not expect the butter to shove the straws down under the breast plate. Adjust the position of the head to bring the straws under the breast plate and then adjust the butter to smooth the butt of the bundle. In uneven grain the head, butter and reel must be shifted often to obtain the best results. In very short grain or in down grain leaning toward the elevators we have probably the worst conditions for good bundle making, especially for eight-foot binders. First, do all possible to retard the heads by running the platform as level as possible and place a rope head-retarder across the platform, tying the same to the outside divided frame. A rope head-retarder is often found to give better results than the retarding strap iron sent out with the machine, but if the latter is used, the operator will find that he gets very good results in retarding heads by bending up or crinkling the end of the strap iron. Throw the head as far forward as possible and run the butter as near perpedicular to the rollers as possible to still have the bundle securely tied. Tighten the front grain check.

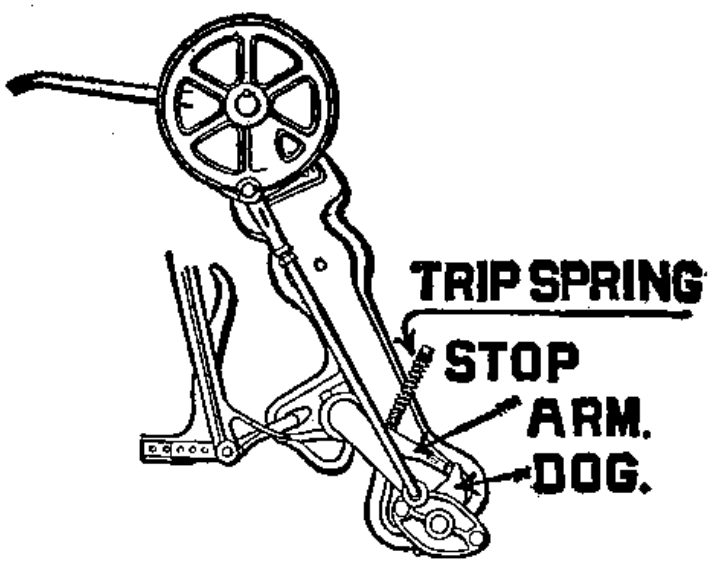
Badly Shaped Bundles in Long Tangled Grain can be remedied by loosening all grain checks slightly and by adjusting the head to tie a smaller, looser bundle.

Getting Grain Down to Packers. Trouble is sometimes experienced in getting light, fluffy grain down to the packers. See that the deck roller is working properly and lower the deck cover.

Choking Down. Sometimes in heavy, fluffy and tangled grain, and often in flax, the head cannot discharge a bundle and is stopped by "choking." Adjust the head to tie a smaller, looser bundle, loosen all grain checks and loosen the tension on the compressor spring, which is the spring attached to the compressor rod.

Bundles Too Loose or Too Tight. Tighten or loosen the trip spring shown in Illustration 1 and described below under "Binder Head Troubles." Do not attempt to make a tight bundle by tightening the twine tension on the twine can. The twine tension is not for the purpose of affecting the tightness of bundles and if it is used for such purpose serious needle trouble wil result. The twine tension should be sufficiently tight to keep back slack in the twine between the can and needle.

Bundles Too Large or Too Small. Move the compressor arm nearer or farther away from the needle. The compressor arm is that arm against which the bundle is formed and as it



is moved in or out that space in which the bundle is formed is changed.

Reel Troubles. Short oats is often the cause for considerable reel trouble, especially reel breakage on those machines which have no outside reel support. The operator cutting short oats will necessarily have to tilt his platform well forward and run his reel low. This means that occasionally the reel slats will whip down onto the guards and result in broken parts. Farmers in some localities have solved this difficulty by tacking on to each reel slat a piece of heavy linoleum about six inches wide. The reel can then be run higher, for this extra piece on the slats serves admirably to force the grain over onto the platform and at the same time is sufficiently flexible to give if the reel is whipped down on the guards.

Binder Head Troubles

Before taking up binder head troubles let us refer to the first illustration and get clearly in mind the exact function of the parts mentioned. Every operator is aware that his packer shaft revolves continually and that at certain moments it must drive the whole binder head while the bundle is being tied and cast. The dog, shown in the illustration, is that mechanism which throws the head in motion with the rest of the machine, or it is that mechanism which momentarily engages the head with the continuous motion of the packers while the bundle is being tied. Sufficient pressure by the straw on the trip arm raises the stop arm, shown in the illustration, which allows the dog to be forced into the path of the continually revolving binder head driver. A little spring attached to the dog forces the dog into the path of this driver when the dog is released, and this same spring holds the dog in this path until the stop arm can drop back into place and force the dog back out of the way of the revolving drivers of the packer shaft. When the dog is thrown back out of the path of the binder head drivers, the motion in the head ceases and the dog, if properly working, must remain engaged with the packer shaft until the discharge arms make a complete revolution. The continuity of motion in the head depends upon the dog.

Discharge Arms Fail to Start or Fail to Revolve Completely. This is a dog trouble. See that the dog spring is in place and is of sufficient strength to hold the dog in the path of the binder head drivers when the dog is released. See also that the striking faces of the dog and dog driver are not worn sufficiently to permit them to slip by one another. If the discharge arms revolve by jerks it is very probable that a worn condition in the striking faces is the cause.

Discharge Arms Revolve Continually. Before discussing this trouble a word should be said regarding timing. It will be noticed that every part of the binder head except the packers works at a certain moment in relation

to other parts. The dog makes a certain number of revolutions before the stop arm is allowed to drop back into place to throw the dog out of engagement with the binder head drivers. Hence the relation between the stop arm and the dog is a set relation maintained through beveled gears. If for any reason these gears are separated and not put back in the original definite relation to each other, the head is said to be out of time. This means that the stop arm would not be in place at the proper moment to throw the dog out of engagement and a second revolution of the discharge arm immediately follows the first. The timing principle holds true in all makes of heads and is obtained in a way more or less common in all types, though the mechanism will vary to some degree in its shape and position. If the discharge arms revolve continually the head may be out of time or the stop arm face may be so badly worn that it allows the dog to slip by when the two come together. If the machine is out of time, i. e., if the stop arm is not in place to throw the dog out in the proper time, time the head by properly meshing the beveled gears between the packer shaft and the binder head counter shaft which runs up to drive the tier shaft. If the striking faces between the dog and the stop arm are so worn that they slip by one another, file the faces to their original form. If this allows too much play or looseness in the dog (which can be tested by taking hold of the discharge arms to determine whether they are tight or loose) a new dog or perhaps a new stop arm must be purchased. Some machines permit lengthening of the stop arm. Look for such adujstment and use same to hold the dog back tighter.

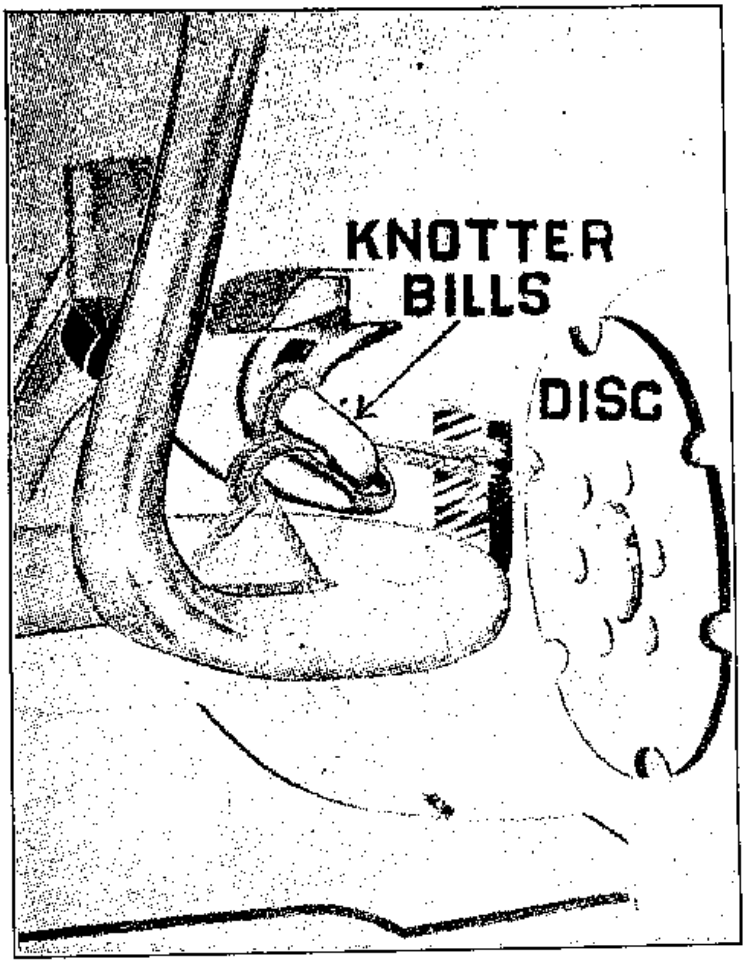
Casting Very Small Bundles. There are two causes for this trouble. The dog may not be thrown out at the proper time, and the remedy for such a condition has been just stated above. Small bundles often appear in badly tangled grain when the case bundle is not cleaned from the machine and its weight trips the head again immediately and a small bundle is cast which seems to be really a part of the first. Manipulate the machine to make a clean bundle, loosen the grain checks, adjust the trip spring to tie a looser bundle and adjust the compressor arm to tie a smaller bundle.

Discharge Arms Not Set Tight, or Dog Drive Strikes Dog. Usually these two conditions accompany one another and are due to extreme wear in gears and dog, or tier shaft lock may have become loosened. The tier shaft lock is usually a little dog working behind the tier shaft cam wheel at the end of the tier shaft. It holds the discharge arms in place when they are at rest. Examine your binder head for this mechanism and if it can be adjusted usually the trouble can be remedied by such adjustment. If the cam track in tier shaft cam wheel acts as the lock, new parts may have to be added to relieve badly worn conditions, but this will not necessarily remedy the striking between dog and driver. If head is very badly worn and all gearing has considerable play, the dog may be advanced one cog which will bring the head into better time. Great care must be used in doing this, however, for it often happens that a head so treated will work perfectly when operated by hand, but when driven by the packer shaft under actual conditions the tier shaft is not compelled to complete its revolution and thus is not "driven home" and locked. This will then result in the discharge arms dropping down and in greater interference between dog and driver. It is sometimes found necessary to replace badly worn gears, in order to entirely eliminate this trouble.

Knotter Head Troubles

All binders are very similar. They combine the same principles, and although the detail of the mechanism may differ somewhat, still for every vital part on one make of machine there can be found on each other machine a part similar in function, very similar in shape, and often very similar in position. This is particularly true in the knotter head or that portion of the binder head which ties the knot. In discussing these troubles then, let us bear in mind that every make of binder has in some form each part shown in the second illustration, and that the functions of these parts are the same though the position and shape may vary slightly.

The disc is that part which holds the end of the twine while the bundle is being formed. The bills, also shown in the illustration, are those parts



which tie the knot. It is the function of the needle to bring up the needle end of the band, place it over the bills and into the disc where the disc catches it and securely holds both ends. The bills then revolve, forming a loop about themselves, and after revolving part way they open, seize both ends of the band, as shown in the illustration, and hold the ends of the band while the stripper arm pulls the loop off the bills—hence the ends of the band are pulled through the loop and the knot is tied. If these operations are kept clearly in mind the operator will find his tying troubles greatly simplified.

Each operator should be able to tell just where his trouble lies by examining the failing band and noting where it is found.

In the third illustration, Figure 1 found clinging to the bills with the simple knot tied around the bills and the loose end cut square and smooth, indicates that the disc spring is too loose and the twine tension is too tight.

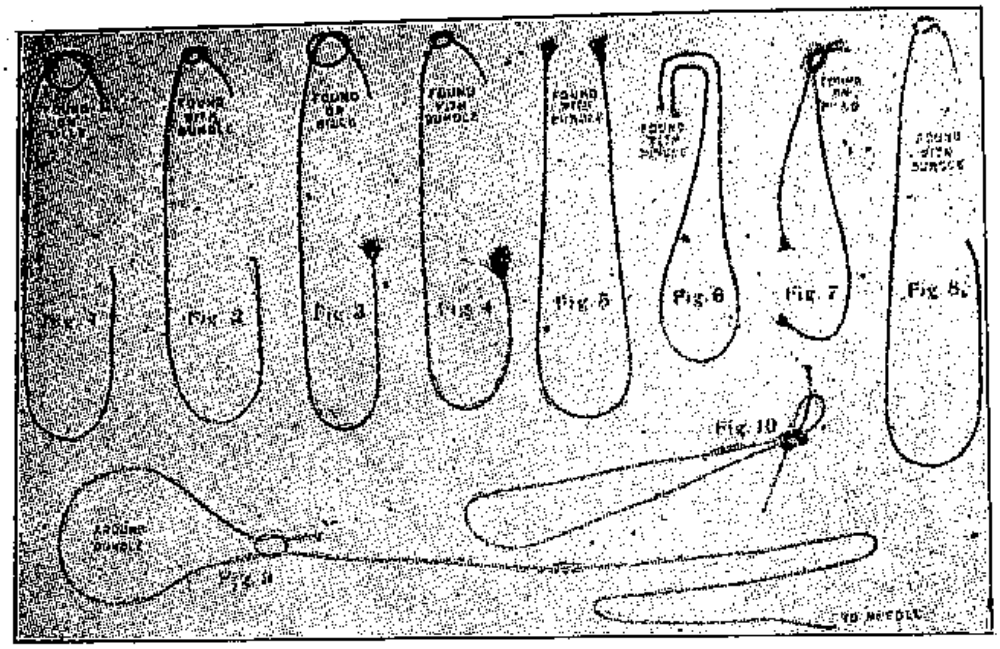
The same band found cast with the bundle instead of clinging to the bills would indicate that the disc is but slightly loose, yet too loose. The band indicating such trouble is shown in Fig. 2.

Fig. 3 found clinging to the bills but with the free end crushed and ragged indicates that the disc is too tight and that the twine tension is also too tight.

Fig. 4 found cast with the bundle instead of on the bills indicates that the twine tension is perfect but that the disc is slightly too tight.

Fig. 5 found with the cast bundle and with both ends crushed and ragged indicates that the disc is very tight.

Notice the bent crinkled ends in Fig. 6 and that the band is formed with the bundle. The ends have been in the knot but have pulled out. The bills may be too loose or the "hump" on the underside of the upper bill may



be worn away sufficiently so that the bills cannot hold the ends of the band securely enough when the loop is pulled off. This probably has caused a loose knot which pulled out when the bundle spread. If the bills are too loose tighten the bills spring. If the little "hump" is worn away file away a little of the stock behing the hump, using a rat-tail file.

Fig. 8 is the familiar band which seems to be tied perfectly when the bundle is first cast, but when the shocker grasps the bundle the band gives away and appears as shown. If the disc is at the proper tension, then the trouble is probably that the bills do not open wide enough to grasp both ends of the twine in the disc. If the bills cam roller on the back of the upper bill is worn one-sided, supply new parts. If the whole bills shaft has dropped down due to wear below the bills pinion gear, place a very thin washer under pinion to bring the bills up against the knotter head frame where they belong. It sometimes happens that a very loose twine tension allows sufficient slack in the twine to arch slightly over the bills instead of being pulled down tightly over them. The upper bill will then nose in between the bands' ends instead of grasping both of them and a simple slip knot is tied instead of a hard knot.

Fig. 9 indicates a needle trouble. For some reason the needle has not placed the twine in the disc. Most likely the needle has carried up some green stuff of some kind which momentarily clogs the disc. If this band occurs frequently, however, then probably the eye of the needle has become so badly worn back, due to too tight a tension, that the needle can not advance far enough to place the twine in the disc. The needle should advance until it just barely touches the stripper or breast plate If it does not advance that far it is probably slow and the needle pitman should be shortened slightly

Make all binder head and knotter head adjustments gradually. A quarter of a turn of the studs on the disc and knotter bills springs is ample to remedy most troubles in those parts.

SEDGWICK COUNTY FARMERS' DIRECTORY

Abbreviations Used in this Directory

a—Acres; Ch—Children; O—Owner; T—Tenant or Renter; R—Rural Route; Sec—Section; Maiden name of wife follows directory name in parentheses ( ); figures at end of information—year became resident of county. Star (*) indicates children not at home. Name of farm follows name of children in quotation marks. In case of tenant, the farm owner's name follows the figures giving size of farm.

EXAMPLE

Jones, John R (Vera James) Ch James, *Albert; "Sunnyside Farm" Sedgwick R1 Riverside Sec 13 O160a (1866) Tel. Sedgwick Sedgwick.

MEANS

Jones, John R—Name.
(Vera James)—Wife's Maiden name.
Ch James, *Albert—Children named James, *Albert.
"Sunnyside Farm"—Name of farm.
Sedgwick R1—Postoffice Sedgwick, R. F. D. 1.
Riverside Sec 13—Riverside township, Section 13.
O160a—Owner of 160 acres.
(1866)—Lived in county since 1866.
Tel. Sedgwick Sedgwick—Telephone.

A

Abraham, James H., (Jennie R. Quinn) Ch Margaret, Eunice, Henry, Ruth, Ora; Wichita R6, Riverside Sec 22 O151a (1917) Tel Oatville Oatville

Abraham, T. H., (Mary Baird) Greenwich R1, Payne Sec 10 T160a A. Miers (1918)

Adams, Harry, Mt. Hope R2, Greeley Sec 34 T150a M. Adams (1910) Tel Bell Mt. Hope

Adams, L. R., (Veva Shaner) Ch Katheren, John, Alice, Donald; Colwich R1, Greeley Sec 25 T240a Lidea Lindsay (1884) Tel Bell Mt. Hope

Adams, N. E., (Nora Herriott) Ch Helen; Cheney R2, Grand River Sec 31 T160a H. E. Phillips (1910) Tel Cheney Cheney

Adams, Sidney, (Rosa Mitchell) Ch Vivian; Wichita R6, Salem Sec 15 O1a (1906) Tel Darby Darby

Adams, Sidney (Rosa Mitchell) Ch Bertha, William; Peck R1, Salem Sec 20 T80a Harry Howell (1918)

Adamson, Joseph A., (Maggie Carnahan) Ch *Claude; Valley Center R3, Park Sec 12-11 T160a W. R. Adamson (1890) Tel Bell Valley Center

Adamson, Otis W., (Ethel Fawbush) Ch Vivian, Virgil; Bayneville R1, Waco Sec 32 T160a Mrs. L. Hillis (1892) Tel Clearwater Clearwater

Addis, Abe, (Susie Corey) Ch Rosa, Franke, Maude, Mae, Fredie, Icer, Martha; Wichita R7, Riverside Sec 18 O20a (1913)

Adkins, Emmitt, (Jessie Boatman) Ch Mildred; Derby R1, Rockford Sec 24 T160a J. A. Kerrey (1918)

Adkins, S. S., Ch Willie, David, *Charles; Anness R1, Erie Sec 14 O160a (1910) Tel Norwich Norwich

Ahlf, John L., (Gertrude Evertt) Ch Lester, Margret, Hazle, Glenn; Wichita R4, Wichita Sec 24 T160a John Kelly (1915) Tel Bell Wichita

Ahlf, Rudolph W., (Agnes McGarry) Ch Katherine, Josephine, Frank, John; Wichita R7, Riverside Sec 5 T160a J. S. Nave (1909)

Alaxander, Ole C., (Mary Sweat) Ch Gladys, Alberta, Minnie, Alfred, *Pauline, *Lee; Sedgwick R3, Eagle Sec 24 T80a V. Lanning (1908)

Albers, Herman H., (Emma Wetta) Andale R1, Garden Plain Sec 4 T160a Joseph Wetta (1908) Tel Garden Plain