Veterinarians in beef practice are concerned with several problems. One of the things they have in Hawaii is a lot of marginal soil, particularly low in phosphorus. There are different elevations to contend with. Because there is a trade wind system and there are a lot of high mountains, the wind patterns change so that there can be different soil types and much different rainfall even on the same ranch. This creates a lot of problems with nutrition and management. Intestinal parasitism is a problem because there is a certain type of fluke in the wet areas. Grubs are also found in certain areas. The beef veterinarian's main thrust is herd health programs. Vaccinations for IBR, lepto, blackleg, malignant edema are necessary. They also have parasite control programs, breeding, which involves pregnancy checks, sterility programs and bull checks. There is some estrous synchronization starting and there has been some embryo transfer work done on the big island on some purebred herds but there are no local veterinarians presently involved with embryo transfer. I tried a little but I have not had much success and there is not much need in the dairy practice right now.

The veterinarians working in dairy practice amount to three or four working on the different islands. I happen to be the one that has the largest dairy population and therefore I spend the majority of my time on the dairies. Problems we find in the dairy include nutrition. The biggest problem we have is a lack of low cost high quality roughage. When they took the greenchop away that really created an additional problem. Another major problem, and I think the people from Florida can appreciate what I'm talking about, is the environment. The temperature and humidity rise at certain times of the year to the point that cows are tremendously stressed. Their feed consumption goes down. As you would expect their production goes down. They stop showing heat. They get so miserable that they don't want to move from one place to another, let alone show heat. The ones that do show heat very seldom conceive. Of course along with the temperature and humidity there is quite a lot of rain and so the pens get muddy and there is a tremendous increase in mastitis, particularly the environmental kind. Another problem that the dairies have in Hawaii involve the facilities. They need to have more environmental control. Management is always a problem. Education is a big factor. Mainly, we do herd health and reproductive programs which is the mainstem of all other programs. We're getting into mastitis. I have a mastitis laboratory in my clinic that is patterned after Dr. Bob Bushnell's. I do some diagnosis, treatment and surgery. A lot of the dairy staff do the day to day treatment and I get called or I consult when I am out there on particular problems.

I need that extra arm to palpate. I get very tired with a lot of these animals. I use Nicholson pouches that you can pick up at the hardware store that the carpenters use. They work very well to hold a lot of things...chalk, guns, vials, syringes. I keep my used pipettes in an OB speculum. That works pretty well if you put it in your boot because it is rather soft and tends to melt down into your ankle better. You just tape off the one end and that way you can carry around your used pipette and you don't litter up the place which I think is something veterinarians should consider carefully. Being a professional person, you ought to have a professional image and I don't like to leave anything behind.

I use a Cooper automatic drench gun that I think Burroughs Wellcome markets. There are a couple of other improvements but I happen to like that one if you take care of it. I wanted to show you one thing.

I think the more times I go into the office and sit down and talk with that manager the better job I am doing in a herd health program in that dairy. You can go out there and show a lot of action and be around behind those cows and stooping here and there, but unless you get in and sit across the table from the manager and make him listen to you, you're not getting the job done.

Isoniazid Therapy in Bovine Practice

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Isoniazid, a hydrazide of isonicotinic acid, is a synthetically produced white, odorless, crystalline powder or tablet. It is water soluble and is slowly affected by exposure to air and light. From human medicine we know that it is rapidly absorbed (1-2 hrs.) and is diffused readily into all body fluids, including cerebrospinal and pleural; body tissues, organs and excreta (including saliva and urine). Isoniazid is excreted via the urine with 50 to 70% of the dose being excreted within 24 hours.

Isoniazid, widely used since 1953, is the most effective known drug for the treatment of human tuberculosis. The drug has been employed with some success in the treatment of non-tuberculosis diseases in man, including actinomycosis.

The mechanism of action of Isoniazid is unknown. Presumably, it is an anti-metabolite, it acts directly against the TB bacillus therefore it is known as antibacterial. Maximal blood levels are achieved in approximately one hour after oral administration. When the drug is administered in the normal dose range, side effects from Isoniazid therapy in man are infrequent and only rarely serious.

Initially I was looking for an effective drug for use in

chronic infections. The majority of drugs available, sulfas and antibiotics, can be used for only relative short-term therapy. Isoniazid is unique in that it offers a relatively safe and economical drug for long-term therapy in chronic infections. At our hospital we used Isoniazid seven to eight years ago for the treatment of third phalanx osteomyelitis in horses so I was familiar with its use on a limited basis.

In my practice I use the drug in the treatment of "chronics," diphtheria, actinomycosis and cellulitis or traumatic pharyngitis in cattle. Since Isoniazid is odorless and relatively tasteless, it is readily accepted in the feed, although in my initial treatment I prefer to administer the drug with a balling gun.

Concerning chronic bovine respiratory distress, *Corynebacterium pyogenes* is a secondary invader especially when pneumonia is chronic and it usually causes abscessed lungs. When the decision is made to turn an animal into the chronic pen or to forego our routine treatment program, my treatment is as follows:

1. 60,000 units procaine penicillin G per pound of body weight IM
2. 5 mg of Isoniazid per pound of body weight *per os*

This treatment is used for five days at which time the Isoniazid tablets then are put in the feed, either crushed or left whole. This treatment seems to work better for smaller feedlots, background lots or farmer feeders; as they can hand feed their chronics. The megadose of procaine penicillin G is used because 78% of the nasal secretions from feedlot cattle with pneumonia are sensitive to procaine pen G. The withdrawal from slaughter I am using is 20 days.

Any diagnosed cases of actinomycosis and cellulitis or traumatic pharyngitis are also put on the Isoniazid treatment of 5 mg per pound of body weight for at least 14 days, in addition to other treatments.

Therapy with Isoniazid has been used for as long as 30 days. Side effects with long-term usage are primarily a deficiency of vitamin B-6 and elevated SGOT indicating potential liver damage.

The Isoniazid I use comes in a 300 mg tablet (1000 tablets per bottle), therefore a 480# calf requires only 8 tablets. My cost per day to treat a 480# calf is 8¢. Currently I am using Bolar Pharmaceutical Co., Inc., Copiague, New York 11726.

The basis of my talk is that here is a drug that is antibacterial with penetrating ability into fibrous tissue. To me, Isoniazid is indicated in chronic respiratory, soft tissue and bone infections in cattle and is definitely an economical addition to my treatment regimen.

Teat Surgery—Stainless Steel Staples

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Teat surgery can be one of the most rewarding services a veterinarian can offer to a dairyman. However, one must use care in selecting the proper cases when attempting surgery. The owner must also be selected and be advised as to the proper aftercare.

After a few years in practice, most veterinarians have adopted certain principles on considerations when attempting teat surgery. To inform the owner of the prospective outcome is of utmost importance. Remember that once a teat or its sphincter is injured, it will never be quite as functional as before. I insist on help from the owner when attempting teat surgery, not only for restraint of the cow, but also to relay the proper aftercare instructions. One cannot be too careful with asepsis during all surgeries. This includes a clean and sanitary surrounding during and after surgery.

Choosing the correct time to open an occluded teat is equally as important. This should always be done only when the gland is lactating, full of milk, and preferably in the morning so that the owner may strip on the teat periodically (every 15-20 minutes) during the day. Use of dilators following sphincter surgery is discouraged.

I have no doubt purchased every teat instrument that has been invented for opening teats. Today, however, I carry only a blunt teat bistoury (Lichty), a sharp teat bistoury, a mosquito forceps, an alligator forceps, a Moore's teat dilator, a lamb emasculatome, and a surgery pack containing retaining milk tubes and an automatic stapling gun. Restraint is usually accomplished with the head pulled to one side by a halter or nose tongs and the owner applying pressure on the tail. Occasionally an epidural is necessary or a ring block of the teat with lidocaine. Xylazine (Rompun) is used only in extremely nervous individuals.

The majority of teat surgeries may be classified in four categories; namely, the opening of the occluded teat, correcting a teat fistula, suturing a lacerated teat, and the removal of super-numerary teats.

In ninety-five percent of the occluded teats, I use a blunt teat bistoury to weaken the damaged sphincter with one cut. The less damage one may do while opening the teat, the less formation of scar or connective tissue will result. The use of curette or drill bit to widen the streak canal only results in the formation of more scar tissue. This is my opinion.

When suturing was required in the early years of my practice, I used a non-absorbable material in the skin closure such as silk, nylon non-filament fish line, or vetaphil. All worked quite well and can be used today. More recently I