Cattle are marked with plastic roof cement as they are processed through a chute. It then becomes a simple matter for a cowboy on horseback to spot any animal that has not been worked, one that is not marked. This is the major purpose of the system: easy recognition of the status of each animal in the herd.

Plastic roof cement offers several benefits. It is easy to apply, by just rubbing it on with an applicator stick. It is very visible, surprisingly even showing up well on black cows. It is durable, generally persisting two to three months. It is inexpensive, costing about two-and-a-half cents per cow. These advantages, plus the fact that there are no apparent harmful effects, have made plastic roof cement a very useful product. In summary, the use of plastic roof cement to mark cows has allowed total compliance to all recommended health procedures. Without this system, a thorough and complete health program would not have been possible. Therefore, I recommend this system to anyone desiring such a goal.

Table 1. Marking system used at summer processing.

Area Marked	Status	Interpretation
None	Unknown	Bring in for examination
Hips	Pregnant	Will calve in spring
Shoulders	Open	Move to fall program
Hips + head	Pregnant	Performance cull
Shoulder + head	Open	Reproductive cull

Using Serum Total CO_2 or Bicarbonate Values to Individualize Fluid Therapy

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Conditions such as calf diarrhea, grain overload, vagal indigestion, and abomasal torsion often result in dehydration with very different types of electrolyte and acid-base abnormalities. If one is able to rapidly determine whether the animal is suffering from metabolic acidosis or alkalosis, and how severe that derangement is, one is able to better correct the acid-base and electrolyte abnormalities. A rapid test kit (Halereco Total CO_2 Apparatus Scientific Products) for estimating serum total CO_2 (TCO_2) is available. It is inexpensive and gives reliable results. The principle of the test is based on addition of lactic acid to the patient's serum: $H_2CO_3 \rightarrow H^+ + HCO_3^- \rightarrow H_2O + CO_2$.

The reaction is driven to the right in a closed container, and the CO_2 collected in as glass syringe. The amount of CO_2 is read directly off the calibrated syringe, and corresponds to the amount of bicarbonate present in the serum. Thus, the metabolic acid-base status of the patient serum is rapidly determined.

Acidosis:

Intravenous fluids are needed to treat hypovolemia, dehydration, and metabolic acidosis. If available, blood gases or a Harleco Total CO_2 measurement should be used to assess degree of metabolic acidosis. A plasma pH below 7.1 carries a poor prognosis for survival. The normal plasma bicarbonate level is 24 to 28 meq/L. Deficits can be calculated by subtracting the measured value from the normal value and multiplying by the number of liters of extracellular fluid in the patient. ECF volume is arrived at by body weight in Kg X .30 (30% of weight is ECF). For example, you measure a plasma bicarbonate of 10 meq/L in a 500 Kg cow. The calcuclation is 16 meq/L (26 minus 10) X 500 Kg X .30 = 2400 meq HCO_3^- required to correct deficit. One gram of baking soda ($NaHco_3$) contains 12 meq HCO_3, so

$$\frac{2400 \text{ meq}}{12 \text{ meq/gm}} = 200 \text{ gm sodium bicarbonate.}$$

Isotonic sodium bicarbonate is 1.3% (13 gms/L), so

$$\frac{200 \text{ gm}}{13 \text{ gms/L}} = 15.4 \text{ L of}$$

1.3% $NaHCO_3$ should be given I.V. This can be added to water or 5% dextrose and given I.V. at a rate of about 5 L/hour.

Additional volumes of isotonic fluids will be helpful in combating dehydration, promoting diuresis and allowing renal buffering mechanisms to function. Lactate containing fluids should be avoided, as lactate metabolic pathways are overwhelmed and essentially nonfunctioning.

Alkalosis:

If available, blood gases or a Harleco Total CO_2 should be used to assess degree of metabolic alkalosis. Normal plasma bicarbonate level is 24 to 28 meq/L. Markedly elevated bicarbonate levels indicate metabolic alkalosis. When associated with hypochloremia, this alkalosis is best corrected by administering IV chloride. Fluids with normal levels of sodium (140-156 Meq/L), high levels of chloride (156 meq/L or more), and some potassium are indicated. Saline with 30 to 100 meq/L KCl added is an ideal fluid. Flow rates should be around 5 to 6 liters/hr, and potassium infusion rate should be kept around 1 meq/Kg/hr and

should not exceed 2 meq/Kg/hr. Total volume required will usually exceed 40 lites and may need to be carried on for several days at 40 liters/day. If no clinical improvement in rumen motility, passage of ingesta, or appetite is seen within a few days of treatment, a very poor prognosis should be given.

Practical Approach to Colostomy in the Calf

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This is a presentation of an easy approach to assessing and performing surgery on calves with various forms of atresia ani and atresia coli.

This can be done at any veterinary clinic and with a minimum of equipment. Success can be very good and a completely functional calf, taken up to slaughter weight, can be achieved.

The age of the calf, degree of dehydration and shock, as well as bloated appearance determine the prognosis. A well advanced case would carry a poorer prognosis and necessitate additional treatment. You want to choose cases which are 0-2 days old, still ambulatory, making good attempts at straining and are not dehydrated to the degree of necessitating I.V. fluids.

Only in the cases of an intact anal sphincter with a thin membrane present would I do surgery in the rectal area since construction following surgery invariably leads to a poor doing animal and repeated surgical procedures are often necessary.

Surgical Procedure: The calf is sedated and is prepared on the right paralumbar fossa. The calf is given a line block with the idea of performing a quick exploratory surgery to make sure things like artesia of the spiral colon, artesia jejuni or other abnormalities are not found. If major problems are found the calf is euthanatized.

The surgery is very simple. We search for the caudal blind sac and then we attach the caudal most portion that is possible to the abdominal muscles at the incision. This attachment is made fairly high up (4 inches below the paralumbar fossa). If it is made too low, prolapse of the colon can occur and it then has to be attached to the abdominal wall. Once the serosal surface is sutured down the intestinal wall is incised while suturing the mucosal side to the skin. If this is done as it is incised and with continuous flushing and packing of the intestine, minimal contamination results. When this is completed you are left with an opening 1½-2 inches in diameter. The calf is put on antibiotics for 4-5 days.

Complications are minimal and rarely is the calf seen again. The manure runs continually out and down the side. No scalding of the skin or skin reactions have been seen to date.

The farmer has a viable calf without a large expense along with a very good prognosis and most times very little or no after care. The calf is often of great interest to his neighbors and a real conversation piece!

Practical Management of Bovine Leucosis

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Bovine leucosis in our practice is a concern primarily for the purebred breeder. The prescence of the virus affects the sales of offspring both to domestic and international buyers. Secondary losses are incurred because of animals succumbing to one of the clinical forms of leucosis.

The inevitable conflict develops in these herds between the need to develop a herd free of leucosis and the financial constraints of a simple test and slaughter program where valuable animals are concerned.

Because of the economic pressures of the industry our goal was to try and design a program where we could minimize the spread of the virus from positive to negative animals without having to cull large numbers. We hoped that if we could stop the spread of the virus we would be able to build a population of negative animals to act as replacements for the herd. Thus over a period of five to ten years the positive animals would be removed as the became expendable due to old age or other reasons