

Misc. Series #108

AN ANALYSIS OF FARM RECORDS

AND ACCOUNTS

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- PART I Methods of Keeping Farm Records
- PART II Some of the Principles and Problems
Involved in Analyzing the Cost of
Producing Farm Products

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Farming as a Business

The farmer of today buys his implements and machinery, his spray materials, binder twine, and general supplies. He uses the materials thus purchased in growing crops and raising livestock. He sells the products of his farm. Buying, producing, selling, these are the things which are done by all businessmen whether one considers the manufacturer of farm implements or the packer of stock products. The manufacturer and the packer are business men. The farmer who succeeds treats his farm as a business.

How to Study the Farm Business

The success of any business is affected by the skill with which the operator buys, produces, and sells. Constant study is necessary to learn new methods which will reduce expenses or increase yields or receipts. Three well recognized methods of study have been developed in an attempt to find better farming methods.

Experiment

Much of our present knowledge concerning the best ways to feed cattle, hogs, sheep, and other animals is the result of careful experiments with feeds and methods of feeding, carried on under control of trained men. Crop production has been as carefully studied. In a broader way, every farm is an experiment station, where new ways are continually being tried. The experiment method will doubtless remain as one of the sure ways to improve farming, but it is slow and expensive and subject to many soil and climatic variations which change results from year to year.

Surveys

If each farm is considered as an experiment station, it follows that the results of many experiments for a single year can be secured provided a large number of farms are visited and the information which has been accumulated is brought together for study. From a business point of view surveys are needed which will show farm areas and investments, crops grown, farm expenses, and farm receipts. A farmer living in an area where such a survey has been made can compare his farm and his methods directly with the results on successful farms as shown by the survey and make adjustments in his business accordingly, which will normally result in more profit. Or he can compare his farm with results on similar farms in another state. But he will be unable to see for himself just how good or poor some of his methods are till he studies his own business in some detail.

Farm Accounts

There are many forms of accounts available for use in recording the sales, purchases, and day to day happenings on the farm. The farmer who is interested in making his business more profitable will find that some kind of farm record is the most convenient method by which he can study his own business, detect losses, and secure information to improve his business.

Reasons for Keeping Farm Accounts

There are many reasons why a business farmer should keep farm accounts. A few of the more important results from keeping accounts are as follows:

1. It gives a record of where feed, material, labor, and money are used. A man may believe that he is feeding economically, or that his labor is spent wisely, but an actual record of just what is done often shows

- unexpected waste.
2. It indicates what it costs to produce farm products.
 3. It gives the crop yield and the animal production.
 4. It shows that profit or loss will be made by selling at market prices.
 5. It is an aid in dealing with other men.
 - (a) By recording notes, bills and debts, it avoids mistakes and misunderstandings.
 - (b) It gives information about the farm that will aid in securing a loan from the bank.
 6. It records facts needed to make out an income tax blank.
 7. It provides a means of studying the farm business. This is the most important reason for keeping farm accounts. Records kept but not studied are of little value. Merely keeping records will not increase farm profits, but studying these records will show many places where improvement can be made in the business. The records will show which crop pays best. It should give information that will help in selecting the combination of crops that will pay best. The results of one year's business can be compared with the previous year to find how changes have worked out. The records of the farm can be used to compare with those of other men, neighbors, or in other regions. Out of this study will come changes that will build up the business, aid in avoiding loss and make it more profitable.

Farm Accounting

The reasons for keeping accounts emphasize the fact that it is the information secured and its use which are valuable. Bookkeeping is usually considered to be a mere record of fact; it contains no provision for analyzing facts. Accounting begins where bookkeeping ends, that is, accounting studies and analyzes the facts which are recorded, and finds the costs of doing business. Farm accounts really do both, as the facts of the farm business must be recorded before costs can be found and before they can be studied, but the study is the valuable part.

Kinds of Farm Accounts

Mention was previously made of the fact that there are many forms of accounts which might be kept. Choice of a kind of farm account will depend upon what a farmer wants to know about his business. This can be illustrated by a brief discussion of the various kinds of accounts.

Simple Inventory Account.--This involves making a list of all livestock, feed, seed, tools, and supplies and their value, the value of land and buildings, the amount of cash on hand, a list of what other people owe us, and a list of what we owe other people. This inventory is taken once a year. By comparing the total amount of money tied up in the farm business at the end of the year with the amount at the beginning of the year, one can determine whether there has been an increase or a decrease during the year. But if money has been received during the year for the sale of crops or livestock, and this money has been spent for personal use, it will not show as cash on hand at the end of the year. So the farm might have been profitable without any increase in the inventory at the end of the year.

The inventory does not show just which crop or class of livestock was most profitable, or which enterprise caused the greatest loss. Yet the inventory if carefully taken is a most valuable record. It shows what one had on hand, and often suggests that too much money is tied up in some one branch of the farm business. The inventory becomes a valuable record of changes in farm stock and tools from year to year.

Intermediate Accounts with the Farm as a Whole.--By adding a cash account, and a record of important farm happenings such as dates of last frost, dates of beginning work on certain crops, yields of crops, etc., to the above inventory account, a farmer may keep a more accurate record of his business progress from year to year. The combination of an inventory and a cash account which gives all farm receipts and all farm expenses, will give information from which one can work out an income tax report. It forms a record of sales and purchases that may help in avoiding disputes. It shows where money comes from and where it goes. It acts as a check on the actual money on hand or in the bank. It can be used as a source of information for studying the farm business in part.

But it is hard to study and find the actual receipts or expenses from any crop because they are scattered through the cash account unless the important crops and animals have separate columns in the account.

Neither does the cash account show the cost of producing any crop or class of livestock, hence it cannot show the profit or loss of any branch of the business.

To a farmer who wishes to get the most good out of keeping farm accounts, neither the inventory account alone, nor the inventory plus the cash account will give enough information. More is needed to complete the study.

Complete Farm Accounts.--It is the purpose of complete farm accounts to make a record of all the necessary and important items connected with the operation of the farm, and to keep these facts separated in such a way that the operator can easily learn the costs of any branch of his business and the returns from it. This means that in addition to the inventory there should be a record of where labor is spent. There should be a separate account with each important crop and class of livestock; an account with personal or household expenditures and other accounts. The items to be entered in these various accounts and the reasons for keeping them will be explained.

Types of Account Books

There are many books on the market which are put out to be used in keeping farm accounts. Most of them are ruled with headings placed at the top of every page. Few of them are adapted to the majority of farms. Some of them are unnecessarily expensive. The important thing for the farmer is first of all to decide upon how complete a set of accounts he will keep, get a blank book with columns ruled for dollars and cents, write in his own headings, and begin the record.

Methods of Recording Work

The most laborious part of keeping farm accounts is the keeping of the labor work record. Work is done every day. It is done by several men in several fields, with a changing number of horses. It is sometimes difficult to keep the hours separate. But it is well worth while as the largest source of waste on the typical farm is the waste of man and horse labor. Much time is lost almost unconsciously. The very effort needed to keep an approximately correct record of the use of labor, will tend to help avoid unnecessary waste. When the hay stacker rope breaks and five men stand an hour while the rope is being fixed, it seems at the time like a heaven-sent rest, but that night when the hours spent in the hay field are recorded on the work report for alfalfa hay, the owner is likely to make the mental note that next time he will have a new rope ahead of time and not hold up five men and eight horses for an hour without getting something to show for it. And likewise in the case of time spent in doing chores in unhandy barns and corrals, the simple recording of actual time required to do the chores will emphasize the needless waste of time and lead to remedies; while without the record the time spent will not seem so important and changes may be postponed indefinitely.

The important things that should be known about work performed are the date, what was done, the hours or days of man, horse or tractor labor spent.

These can be kept separate quite readily when each crop or class of livestock has a work report page to itself. A satisfactory work report will look something like this:

Work Report with Spring Wheat

Date, 1932	Item of Work Done	Man, hours	Horse, hours	Tractor hours
Mar. 15	Plowing.....	9	27	..
" 16	"	9	27	..
" 17	Harrowing.....	5	15	..
" 17	Plowing.....	4	12	..

Secure a blank book with 50 to 100 pages that are 6 to 8 inches wide and 10 to 12 inches long. Give 2 to 4 pages to each crop, depending on the length of the pages. Get some cloth tape and put a thumb tab on the page so that it can be found without hunting through the book. Then enter the work done from day to day as the season progresses. At the end of the year the total time spent on this crop may be found by adding the columns.

With livestock where a fairly constant amount of time is spent each day in chores caring for them the easiest method is to note the time spent one day a month or one day every two weeks, then multiply this by number of days in month to get the full time spent for the month. The chore time if kept this way can be condensed somewhat. Special items of work can be recorded separately, for example:

Work Report with Dairy Cattle

Date, 1932	Item of Work Done	Man, hours	Horse, hours	Truck, hours
Jan.	Chores for month.....	310	31	..
Feb. 4	Trip for feed.....	5	10	..
Feb.	Hauling milk to station.	28	..	28
Feb.	Chores for month.....	308	28	..

Starting a Complete Set of Farm Accounts

The first step in beginning to keep farm accounts is to take a complete inventory of all farm property. This can be done best during the comparatively slack time in the winter. Since the income tax year ends December 31st it may be worth while to date the inventory January 1, rather than some later month.

The next step is to classify the inventory by kind of livestock, feed, supplies, machinery, etc., and find the total value of each class of inventory.

Next comes the decision as to what individual accounts will be kept, and planning a book with these account headings.

Then enter the inventory values in the accounts and the year is started.

The Choice of Individual Accounts,--This has to be decided by each farmer. A few accounts are needed in any case in order to make complete records, but the choice of how many things shall be studied in detail rests with the man interested. The list of accounts on the average farm will look something like this:

- Inventory or Capital Account
- Real Estate or Farm Account (Pasture may be kept in this account or in a separate pasture account.)
- Man Labor Account
- Horse Account (A separate account can be kept with brood mares and colts if they are an important part of the farm business. Likewise with riding horses if several are kept for that purpose only.)
- Equipment or Machinery Account (A separate account should be kept with the tractor or with the farm truck when used, as they are not the usual farm equipment.)
- Accounts with Productive Livestock (These will depend upon the farm. Possible accounts are Dairy, Beef Cattle, Sheep, Hogs, Poultry)
- Accounts with Individual Crops (These will again depend upon the farm. Alfalfa, sugar beets, spring wheat, winter wheat, corn for grain, silage corn, rye, oats, potatoes, beans, etc., may be decided upon.)
- Accounts of Convenience (These are general accounts which will help in keeping the records straight. For example a separate account might be kept with feeds, and then when any feed is purchased it can be put in this account and later taken from here to the particular livestock account where it is fed. Others might be a manure account, supply account, cattle dealing account.)
- Accounts Receivable
- Accounts Payable
- Interest Account
- Personal or Household Account
- Cash Account
- Loss and Gain Account

Discussion of What Goes in These Accounts.---When a blank book is secured for keeping the accounts a convenient size is similar to the one advised for the labor record, namely, pages 6 to 8 inches wide and 10 to 12 inches long with about 75 pages or more in a book. Thumb tabs should be used on accounts as in the work book.

A couple of pages should be left blank in the front of the book for an index and a general statement concerning the farm business. Then two facing pages should be used for each account. In the case of dairy, personal and cash accounts several double pages should be left for each, as they contain more entries than crop accounts. These double pages should be headed somewhat as follows:

Spring Wheat			Spring Wheat		
Date	Items	Charges	Date	Items	Credits
May 20	800 lbs. seed @ 4¢	32.00	Aug. 11	Sold 5000 lbs. @ 1 ¹ / ₂ ¢	75.00
			Aug. 21	Sold 10,000 lbs. @ 1 ¹ / ₂ ¢	125.00

Charges and Credits Explained.---Two pages are given to each account so that the charges and expenses connected with the account can be put on the left hand page and all the credits or receipts can be placed on the other right hand page. It is sometimes a little confusing to decide whether a particular item is a charge or a credit. Part of the confusion is due to the fact that we think of the farm business as our business, and think of each item that comes along as to how it affects us. This point of view should be avoided. The farm, or that particular part of the farm which we are studying in some account, is the important thing in connection with that account.

Let us use the dairy account as an illustration. On January 5, 1929, we buy for \$50 a ton of cottonseed meal for the dairy cows. We plan to feed that meal to the cows. Our hope is that the cows will give enough milk to pay for the meal. Obviously the cows have received something of value, when they get this cottonseed meal. In a way we could say that the cows are now responsible for that meal. We have put it in their keeping. We don't ask for the cows to give it back to us again in the form of meal. We want them to give us something else in place of the meal, something that has a value as great or greater than the meal. This may be milk, or the growth of a calf that we can sell, or an increase in the growth and value of the cow herself--anything that will return the price of the meal purchased.

Now what is the meaning of "charges"? Another word sometimes used is "debit" which is abbreviated to "Dr." An account is charged with any item that it receives; it is charged whenever it becomes responsible for some item; it is charged whenever value is put in its hand. An account might, if it could talk, use the language of the old hymn, and say "A charge to keep I have," whenever it receives some item of value.

To return now to the \$50 ton of cottonseed meal. The proper entry in the dairy account will be on the left hand page as a charge, as follows:

"Jan. 5, 1 ton cottonseed meal, \$50."

What is a credit? The word credit comes from the Latin and means "he grants" or "he entrusts." We say that the bank has given us a \$50 credit. What we mean is that the bank has entrusted to our keeping \$50. Or we might say that the bank had turned over the responsibility for \$50 to our keeping. The bank has \$50 less in its safe. We have \$50 more in our pocket. The bank gets credit for the money. It has given out that much value. Later, of course, we will have to return the \$50 to the bank, if we wish to remain in good standing in the community.

Let us return for a minute to the cottonseed meal. We are satisfied that the dairy should be charged for the value of this meal, because the dairy received it. But this meal came from somewhere. It did not just happen. Our farm accounts are not quite complete if we enter a \$50 charge to the dairy and stop. There must be some other account that furnished that cottonseed meal. Some account that is entitled to credit for giving the dairy the \$50. What account will it be?

Did we, as the operator of this farm, pay cash for this meal for the cows? Let us assume that we did. It will have to be paid for sometime. Very well. We paid cash for it. We have \$50 less cash tonight than we had that morning. We have a cash account in our farm accounts. Let us write in on the right hand or credit side of the cash account this entry:

"Jan. 5, paid for one ton cottonseed meal
for dairy, \$50."

Our records are now complete. The cash account has turned over to the dairy account the responsibility for \$50. It left the cash account as cash. It goes into the dairy account as meal, which is a better feed. The cash account has given up value. The dairy account has received value. By crediting cash and charging the dairy we have a complete history of what took place. It took the two entries to give us all the facts. This is why such bookkeeping is called "double-entry."

Any item of value can be studied in the same manner. It will come from some account, a credit to that account. It will go into some other account, a charge. We can see the need of a complete set of accounts now. If we had only a few accounts,

we would continually find items in these accounts that came from some account that we did not have, and so our records could not be complete. There must be two entries for each transaction.

Let us take a few illustrations to see how they work out. "Feb. 4 sold heifer calf for \$15." What account should be credited? The dairy. Why? Because it has given up one heifer calf worth \$15. The value of this calf is no longer in the dairy account. It has been sold. If we go out and count our calves and find one less, then open our dairy account and find a credit entry "Feb. 4, sold heifer calf, \$15," we are satisfied because the dairy has received "credit" for the sale.

What account shall we charge? The calf was sold for cash. If we count up our cash that night, we will have \$15 more than we had in the morning so far as this one item is concerned. The cash account has received some more cash. It is responsible now for \$15. The proper entry in the cash account would be a charge as follows: "Feb. 4, received cash from sale of heifer calf, \$15." The history of this transaction is now complete. The two necessary entries have been made.

"June 25, used five ton alfalfa hay for horses @ \$10." The account with alfalfa should be credited with \$50. The account with horses should be charged with \$50 for hay received from the alfalfa account. Here is a case of values going from one account to another without any charge in the cash account. An item cannot be entered in the cash account unless in the transaction there has actually been cash received--a charge to cash, or cash paid out--a credit to cash.

Charges and Credits to the Various Accounts.--We can now go through the accounts and study what should be charged to these accounts and what should be credited to them.

1. Inventory or Capital Account

Charges

At beginning of year charge the Inventory Account with the value of all mortgages, notes, bills or accounts that must be paid (See Accounts Payable)

At the end of the year charge the Inventory Account with the values of all property returned to it from the various accounts.

Credits

At beginning of year credit the Inventory Account with the value of each branch of the farm business and charge each of these items to their proper accounts.

At the end of the year credit the Inventory Account with the unpaid balances of all mortgages, notes, and accounts which must be paid. (These will be credited to Accounts Payable to close up the year's record.)

The Inventory Account has entries made in it only at the beginning of the year and at the end of the year. It is a summary account of the investment in the farm business and the claims against it. If the charge side of the inventory account has a larger total at the end of the year, than there is on the credit side, the difference is the net gain for the year, because more value has come back into the account than went out from it at the start of the year. On the other hand, if less came back than went out, there is a loss for the year.

2. Real Estate or Farm Account

Charges

At beginning of year with the inventory value of land and farm buildings (credit Inventory Account).

Repairs to fences, ditches, barns, new improvements or land purchases.

Taxes, fire insurance on barns.

Man, horse, equipment labor that has been spent on general farm upkeep and which does not belong to some one crop or class of livestock.

Interest on inventory value.

Credits

At the end of year with the inventory value of land and buildings (returned to the Inventory Account).

With use of buildings (charge the Individual Livestock Accounts).

With use of land (charge the Crop Accounts).

The purpose of the Farm Account is to keep a record of all expenses which are not directly chargeable to some one account. At the end of the year these accumulated expenses should be distributed to the Individual Crop and Livestock Accounts in proportion to the use that each has had of them. Use of land may be distributed on the basis of a certain rate per acre. Use of buildings may be distributed in proportion to the value of the livestock which uses the buildings, or if it can be done as easily, in proportion to the space which each uses. The Farm Account should come out practically even if this is properly done, showing neither a profit nor a loss.

3. Man Labor Account

Charges

Value of all labor hired for farm work.

Value of all work done by operator of farm and his family. (This should be credited to Personal.)

Value of board furnished to labor by Personal.

Value of all farm products furnished to Labor.

Value of rent of tenant house furnished to Labor.

Value of any special expenses directly chargeable to Labor.

Value of any exchange labor done by neighbors.

Credits

Cash received from any work done by men for neighbors.

Value of work done for neighbors in exchange.

At the end of the year, the difference between all charges and above credits should be distributed to the other farm accounts in proportion to number of hours of man labor which was spent on each, crediting labor and charging each other account.

The purpose of the Man Labor Account is to keep a record of all labor expenses. At the end of the year the net cost of labor is divided by the total hours of man labor as reported in the work report to find the average cost per hour of man labor. Then for each account find the value of labor furnished. Credit labor and charge the other accounts.

4. Horse Account

Charges

At the beginning of year with inventory value of horses and horse feed and supplies on hand (credit inventory)

Value of all feed purchased for horses.

Credits

Value of any feed transferred to other livestock.

Cash received for outside horse labor.

Sale of horses.

Charges (continued)

Credits (continued)

Value of all feed used by horses from other farm accounts.
 Value of all horses purchased.
 Veterinary expenses.
 Horseshoeing expense, breeding fees and registration fees, use of buildings, use of man labor, interest on the average inventory.

Manure produced and charged to crops.
 Inventory value of horses and feed and supplies at end of year.
 Use of horse labor by other farm accounts.

The purpose of the Horse Account is to find the cost per hour of horse labor. At the end of the year the difference between all charges and credits is divided by the total hours of horse labor as shown in the work record to find the rate per hour. Then credit Horse and charge each other account with the value of horse labor used on that account.

5. Equipment or Machinery Account

Charges

Credits

At beginning of year with inventory value of equipment (Credit Inventory).
 Cash paid for oil, repairs.
 Value of new machinery purchased.
 Use of buildings.
 Man and horse labor.
 Interest on average inventory.

Sale of any equipment at end of year with inventory value of equipment on hand.
 Use of equipment labor by other accounts.

The Equipment Account shows the cost of equipment for the year. The easiest method of distributing equipment labor to the other farm accounts is on the basis of the number of hours of horse labor spent on productive crops and livestock to find the cost of equipment per hour. Then credit Equipment with the work furnished to each of these accounts.

6. Accounts with Productive Livestock

Charges

Credits

Inventory value of stock and feed at beginning of year.
 Value of feed purchased.
 Value of feed raised or supplied by other accounts.
 Veterinary expense.
 Breeding fees.
 Advertising and selling expense, use of buildings and pasture.
 Purchase of livestock.
 Use of man, horse, and equipment labor.
 Interest on average inventory.
 Any other costs due to livestock.

Sale of livestock.
 Sale of stock products.
 Value of stock products used by personal, or labor or by other stock.
 Value of manure produced and used on crops at end of year with inventory value of stock and feed on hand.

If the total credits are greater than the total charges then the difference is a gain. If the charges are greater the difference is a loss. There will be as many separate Productive Livestock accounts as there are important classes of livestock on the farm. Sometimes a few chickens are kept chiefly to supply eggs for personal use, then it is usually easier to keep such records directly in the Personal Account and not have a separate account with the poultry. The same will be true if one cow is kept for milk, or if a couple of pigs are kept to eat kitchen garbage. There is no need of a separate account for each of these.

7. Accounts with Individual Crops

Charges	Credits
At the beginning of year the inventory value of work done the previous year in anticipation of this crop.	Value of crops sold.
Value of this crop still on hand from previous year.	Value of crops used by personal or labor.
Value of seed on hand or purchased.	Value of crop and straw used by livestock.
Value of manure or fertilizer used.	Inventory of crop on hand at end of year.
Spray materials.	
Use of land and buildings.	
Man, horse, and equipment labor.	
Any other cost.	

The number of crop accounts will depend upon the farm. Sometimes it is convenient to have two accounts with the same crop in different fields, or when cared for by different methods. Usually it is easier to have a separate account for work done in anticipation of next year so that labor so spent can be kept separate from labor done on this year's crop. The value of such labor is then inventoried at cost and carried over to the next year. These regular accounts should show either a gain or a loss as with livestock.

Sometimes when special equipment is used by only one crop it is charged directly to that crop rather than putting it into the general equipment.

8. Accounts of Convenience

After one has kept accounts till he is familiar with the usual methods it sometimes happens that some special item comes up that one wishes to keep separate from the other items in the account. For example, a cow shed is to be built. The cost of this shed properly belongs in the farm or real estate account. But by opening a new account with the shed all expenses and labor connected with building the shed can be kept separate easier. Then it may be inventoried at cost, crediting the shed account with this value and charging the total to the farm account as one item.

Sometimes feed is purchased by the carload to be used by all stock. A separate feed account will aid in keeping the feed straight, crediting this feed account whenever feed is taken for any class of livestock.

Sometimes a farmer buys and sells livestock. A trading account with that class of livestock will be a convenience in showing just how he has come out in his trading operations.

These accounts of convenience illustrate the point that accounts are to be used as a method of studying the farm business. If no study is desired, no accounts will be kept.

A pasture account may be kept or it may be included in the Farm Real Estate Account.

9. Accounts Receivable

Charges	Credits
Value of all farm crops or products furnished to individual men that were not paid for at the time.	Credit with all cash paid later on these accounts.

This account might be called "Record of What Other Men Owe Me." It avoids dispute. By entering the date, amount, and value of item sold, person to whom sold this record stands till it is paid up, then the account should exactly close out with neither a loss or gain except where the other fellow fails or skips out leaving an uncollectable account. Where much business is done with one individual it is usually best to keep a separate account with him. But where items occur only occasionally they may as well be collected in the one Account Receivable.

10. Accounts Payable

Charges	Credits
With all payments made on outstanding accounts.	With the value of all material furnished by outside parties for which you did not pay at the time of purchase.

This account is just the reverse of the previous one, namely, "A Record of What I Owe Other People." Some one else has furnished goods to you, maybe feed to the dairy; if so, this account should give date, name of party, amount and value as a credit which is charged to the dairy. Then when you pay the bill this account will be charged with the payment and the cash account will be credited. This helps to avoid mistakes and disputes.

In a case where a mortgage or note is given it will usually be best to open a new account called "Notes Payable" to distinguish it from the items which are paid more promptly, and which belong under "Accounts Payable."

11. Interest Account

Charges	Credits
Cash paid out for interest on notes, mortgages.	Cash received from interest on money loaned out.
	Interest on average inventory values of farm equipment, livestock.

The purpose of the Interest Account is to keep in a separate place all entries connected with paying or receiving interest. If interest on a \$2,000 mortgage at 6 per cent is paid by the farmer the entry will be a charge of \$120 to the Interest Account and a credit to the Cash. It is put here rather than in the Note Account for two reasons.

First, it would prevent a true balance of the Notes Payable Account if interest was charged to that account when paid, as its entry there would seem to offset the face value of the note which, of course, is not the case. When the note was paid in full the Notes Payable Account would then show a 'loss' equal to the amount of interest paid, which may be near the truth at that, but is not good accounting.

Second, we pay interest because custom has made interest the rent which we pay for the use of money. By keeping all interest in this one account at the end of the year there should be a gain in the account which shows how much our farm has returned to us as interest above our interest on debts.

12. Personal Account

Charges	Credits
All clothing, food, etc., purchased for household or personal use.	Value of labor of farmer which is charged to Labor Account.
All supplies furnished by farm from other accounts.	Value of labor of wife or children which is charged to Labor Account.

Taxes on personal property.	Value of board furnished to Labor.
Repairs on house in which one lives.	Any small sales of produce from
Expenses connected with any animal or animals or crops included in this account.	

crop which is grown for personal or household use, and for which no separate account is kept.

The Personal Account is a necessary part of the complete set of accounts because it shows where the money received from the farm business goes. Very seldom should there be a gain from the personal account, as the only credits in this account usually are the value of the labor of the farmer and his family. While as charges he has access to the money which comes in from the entire business. There may be a fine profit on the farm and it will all be spent in the personal. This record shows where the money went and will make the accounts come out even at the end of the year.

As explained under Livestock Accounts, it is usually easier to include any poultry, pigs, or milk cow kept entirely for personal use, directly in this account. Also the garden may be kept in with the Personal Account. This reduces the number of accounts and is sufficiently accurate for general purposes. Then there will be an inventory charge of the value of such animals at the beginning of the year and a similar credit at the end of the year.

13. Cash Account

Charges	Credits
Inventory of cash on hand at beginning of year.	With all money paid out for any purpose.
All money received from any source.	Inventory of cash on hand at end of year.

The Cash Account should come out even at the end of the year unless some entries have been forgotten. It can never have a greater total of credits than of charges, because one cannot spend money that he never had.

The Cash Account is sort of a control account over the charges and credits of cash in the other accounts. As a matter of fact that Cash Account can be eliminated and the other accounts will remain the same and the true state of the business will be shown by taking an inventory of cash on hand at the beginning and end of the year. But the Cash Account brings all these items together in one place and helps check on the other entries so it is usually well worth while to keep it.

14. Loss and Gain Account

Charges	Credits
With the amount of loss on such accounts as show a loss (credit the particular account).	With the amount of gain on such accounts as show a gain (charge the Individual Account).

The Loss and Gain Account is a summary of losses and gains in the business. If the total credits are greater than the total charges the difference is the net gain of the business, and this net gain will be found to be the same as the difference between the two sides of the Inventory Account. If a personal account is not kept, the gain here will be larger than the one shown in the inventory by as much as the "loss" in the Personal Account.

Closing a Complete Set of Accounts

In the previous discussion of what should be charged and credited to the various accounts a brief explanation has been given of how to close each Individual Account. To sum up the method it will be worth while to quote from Farmers' Bulletin No. 572 by C. E. Ladd, the following order of steps which are convenient in closing up a year's business.

1. The first step is to take a final inventory in the same manner as at the beginning of the year. This inventory should include all bills that other persons owe the farmer and all bills which the farmer owes to other persons.

2. The list of bills payable should be inspected and any items that have not yet been charged should be charged to the proper accounts. For instance, if \$15 for labor is still due the hired man at the date of closing, this item should be entered as a charge against labor.

3. The list of bills receivable should be inspected, and any items that have not yet been credited should be credited to the proper accounts. For instance, if the creamery owes the farmer \$65 for milk and a neighbor owes him for some feed, the \$65 should be entered as a credit to the cow account and the feed item entered as a credit to the account from which the feed was originally taken.

4. The record of all feed transferred to the livestock should be completed, charging the various animals and crediting the various crops. Produce raised and fed is charged against the animals at what it is worth on the farm. Suppose, for instance, there were 80 acres of hay with a total yield of 120 tons (20 tons of which had been sold and a credit entered) and that the feed-disposal memorandum showed 60 tons fed to the cows and 15 tons fed to the horses, leaving 25 tons on hand. If hay is worth \$12 per ton at the barn, the hay should be credited by entering on the right-hand page of the hay account "60 tons to cows @ \$12 - \$720; 15 tons to horses @ \$12 - \$180." Now charges against the cows "60 tons of hay @ \$12" and against the horses "15 tons @ \$12" should be made. When the value of the hay on hand, 25 tons at \$12, as shown in the record inventory, is entered as a credit to the hay account, the credits to this account will be complete.

5. The various classes of livestock should be credited with the portion of unused feeds which were charged to them at the time of purchase or harvest. These farm items will, of course, appear in the second inventory under the group headed "Feeds, Produce, and Supplies."

6. The use of pasture should be credited directly to the Real Estate or to a Pasture Account and charged against the animals using it. The amount charged for pasture should be as nearly as possible the market price; that is, the price for which pasture rents in that region.

7. The value of produce used in the house, if not noted before, should be entered. The proper crops or animals should be credited and charges made against the personal account. This item includes estimates of the quantities of milk, eggs, potatoes, and other products used by the family.

8. The entry of value of board, produce, or other allowances furnished to the laborers should be completed. These charges should be made against Labor and the proper accounts credited.

9. The value of unpaid labor, such as work by the farmer himself, by boys in the family to whom regular wages are not paid, and milking or other farm work by women of the family should be entered. Make these charges against Labor and credit the Personal Account.

10. The animals should be credited with the value of the manure produced and this amount charged against the crops to which it was applied. The valuation of the manure should be made at about the market price at the farm. To find the quantity produced, a record should be kept of the number of loads hauled to the fields.

11. The proper amounts for the use of the buildings by crops, animals, the farmer, or laborers, should be entered. Each crop, each class of animals, the Personal Account, and the Labor Account should be charged with its proper proportion and credit of the Real Estate Account. As a general rule, 8 to 10 percent of the current value of the buildings may be charged as rent. The proportion of the whole sum which each class of animals or each crop should pay will have to be determined by the farmer in proportion to the amount and value of the space occupied by each. Charges for the use of the buildings on one farm were made as follows:

Value of Barns, \$2,000; Use for One Year at
10 Per Cent, \$200

Account to be Charged	Percentage of \$200	Amount
Cows.....	30	\$60
Hay.....	20	40
Oats.....	10	20
Machinery.....	10	20
Hogs.....	5	10
Horses.....	20	40
Corn.....	5	10
Total.....	100	\$200

12. Taxes and insurance paid on personal property should be distributed to the proper accounts. All land taxes are charged to the real estate and distributed as part of the "use of land and buildings."

13. All the hours and minutes of man labor on each enterprise, including the chores, should be added up, these totals being brought together and the sum of the man hours on all enterprises found.

14. The total cost of man labor for the year should be found.

15. The rate per hour should be found by dividing total cost of man labor by the total hours of man labor.

16. The total number of hours found against each enterprise in the Work Record should be transferred to the same accounts in the Financial Record, multiplying each total by the rate to obtain the cost. These items should be credited to labor in the Financial Record Book. When this is completed, the Labor Account should balance within a few dollars, though if the rate per hour were carried out in full to the last decimal place the account would balance. A difference of one mill in the rate for 6,000 hours would make a difference of \$6 in the final results, and a difference of one-tenth of a mill would make a difference of 60 cents. This difference or error is not important enough to consider. It may be carried to the Loss and Gain Account, or it may be added to or subtracted from one of the larger items of labor, in accordance with whether it is a loss or a gain.

17. All the hours and minutes of horse labor spent on each enterprise, including any horse labor on chores, should be added up, these totals being brought together and the sum of the horse hours on all enterprises found, just as was done for man labor.

18. To find the total cost of horse labor, first the horse inventories should be entered, the first inventory as a charge and the second as a credit to the horses. Then the horses should be charged with interest on the average of the two inventories at the current rate in the section and the interest account credited. The ordinary rate charged in most parts of the United States is 5 or 6 per cent on the investment.

19. The sum of each side of the Horse Account should be found. The sum of the credits should be subtracted from the sum of the charges and the difference will be the net cost of horse labor for the year. No charge is made against horses for the use of the harness and other horse equipment, all these costs being charged against the various enterprises in the machinery charge, as hereafter explained, on the basis of horse hours.

20. The rate per hour of horse labor should be found by dividing the total cost by the total hours. The figure thus obtained is the rate per hour.

21. The total number of horse hours found against each enterprise in the work record should be transferred to the same accounts in the financial record, multiplying each total by the rate to obtain the cost. These items should be credited to the Horse Account in the financial record book. When this is completed, the Horse Account should balance within a few dollars. The reason for the failure to balance is the same as that already given for man labor. To make the account balance, the difference can be added or subtracted from one of the larger items or carried to the Loss and Gain Account, as stated in paragraph 16.

22. To find the use cost of the machinery, the first machinery inventory should be entered as a charge and the second as a credit to the Machinery Account, then this account should be charged with interest on the average of the two inventories, as directed for the Horse Account. The Interest Account should be credited with the amount of this interest.

23. The sum of each side of the Machinery Account should be found and the credit total subtracted from the charge total, the same as for the Horse Account. The difference is the total use cost of the machinery for the year.

24. In order to distribute this cost, it may be assumed that for every hour horses were worked machinery was also used. Then each account will have charged against it the same number of machinery hours as horse hours. To find the rate of cost per machinery hour, the horse hours already charged to machinery should be first subtracted from the total hours of horse labor and the total cost of machinery use divided by this difference. Now the use of machinery for the year should be charged in the same way that the use of horses was charged, except the charge against machinery. When this is complete, the machinery account should balance within a few dollars. The difference may be treated as explained in paragraph 16.

25. Any other Accounts of Convenience, such as those for fertilizer or manure, if kept, should be distributed.

26. All the remaining items should be entered in the inventories. The inventory values for the beginning of the year should be entered on the left-hand page of the separate accounts as a charge; that is, the cow inventory should be entered on the left-hand page of the Cow Account, the hog inventory on the left-hand page of the Hog Account, and the others distributed in the same manner. The final inventory for

the year is likewise distributed to the separate accounts, but the items are entered on their respective right-hand pages.

27. The interest, based on the average inventories against all accounts not already charged, should be charged and the interest credited with the total, using the same rate as that used in charging interest against the Horse and Machinery Account,

28. The proper charge for the use of the land should be entered. The rate should be high enough so that, with the use of the buildings as charged in paragraph 11, it will cover interest on the investment in land and buildings, taxes on real estate, and repairs to buildings and fences, for these items were charged to the Real Estate Account. Each crop should be charged for the land it occupied and the Real Estate Account credited.

29. Both sides of the accounts not yet closed should be footed up. The lesser total should be subtracted from the greater in each account. If the charge side is greater the difference represents a loss, and if the credit side is greater, a gain. The sample Potato Account given in table 2, page 6, Farmers' Bulletin Number 572, will illustrate a completed Crop Account.

30. A list of the losses and gains should be made and the total of each found in order to show the net gain or loss on the whole business.

31. Each account and the business as a whole should be studied in order to learn how to improve it.

Studying the Farm Business by Means of Farm Accounts

There is little need for keeping farm accounts unless they are used to study the business.

Why did one crop show a loss? Was the amount of labor used unusually high? If so, what is the reason, are the fields small, are there ditches that cut up the fields so there has to be much waste time turning around at the ends of the rows? Are the tools in poor shape so that work drags? Are the horses too small for the size of the machinery and the character of the soil?

Was the yield low? If so, why? Was it due to some act of nature, or was it due to some act of ourselves? How can it be remedied?

Was the price too low? If so, will it remain low? Does this crop usually pay? Is there danger of a permanent low price?

These are only suggestive. The main thing is to go through the business carefully. Strengthen the weak places. Plan to reduce needless waste. The business farmer wins most easily by reducing his expenses, showing economy in handling his farm, showing judgment in picking those crops or combinations of crops which pay the most for the least expense.

Farm accounts are a mighty aid to such a man in planning his business. Are you getting the most out of your accounts?

Part II Some of the Principles and Problems
Involved in Analyzing the Cost of
Producing Farm Products.

The author's experiment station and college classroom experience with farm records and accounts, together with observation of some commonly accepted views concerning accounting and costs, combine to indicate a need for a review of some of the principles and problems that are involved if one desires to analyze the cost of producing farm products. Farming under the conditions on general irrigated farms in northern Colorado will be used as the basis for the discussion.

Records of cash received or paid out are a vital part of a business. With them, some aid can be had in keeping things straight and in meeting the critical eye of the tax collector. They leave many questions unanswered.

If receipts and expenses are separated into many classifications they tell even more about the business. But they do not answer the question, What does it cost to produce a crop? Few who have not worked at it appreciate the problems involved in assembling the costs of producing either crops or livestock.

In order to emphasize the problem, each account that experience has shown to be necessary to a complete analysis of costs will be discussed separately. Farming is primarily a business of joint costs. Everything done on a farm has direct and indirect effects. Many expenses are for more than one part of the business. The intensive or specialized farmer, with one thing to sell, could consider every item as part of the cost of this one product with a fair degree of accuracy. Even here, he will be faced with the choice of raising his own or buying feed for his horses, boarding his men or paying a higher wage while they board themselves. If his business is the production of livestock, he has the problem of raising vs. buying feed.

A study of the problems of joint cost developed in the following discussion will illustrate the problems which face a student of farm costs. The methods advocated are the outgrowth of trial and experience in handling farm accounts on irrigated farms in northern Colorado.

This method of analysis indicates the time and care necessary for a proper study of the details of farm accounting. It is not recommended for general use by farmers. It is offered rather as a warning to those who glibly speak of "costs" and "profits."

The most workable and satisfactory accounts for the individual farmer would include expenses and receipts classified according to the important crops or livestock produced. Where expenses did not admit of such a classification, a separate record of each such group of expenses should be kept. The total cash receipts and the total cash expenses would show a cash balance from farm operations.

Then, one should study depreciation and changes in inventories to see whether the business was giving a net return for the operator's time and as a return on his investment.

Before one can properly speak of costs or profits, most of the items in the following accounts will need to be analyzed and distributed in order to place upon the productive enterprises the full burden of meeting the total expenses of the farm.

Land

The greatest value from this account comes from using it to aid in answering the question of earnings on investment. For this reason it is advisable to keep out of this account any item which would confuse. Expenses for the farm as a whole belong rather in "general farm" or "overhead."

It is a question whether buildings should be handled separately or included in this account. Where buildings are of minor importance they may be left in with the land. When buildings are used by several important kinds of livestock, a special account with buildings is preferable.

Charge this account with interest on its first inventory of land. The rate to use should conform to local practice and to long time conditions. For example, interest on long time loans has been, at various times and in various parts of the United States, 6 percent, 5 percent, 4 percent or even less. In small areas, 7 or 8 percent has been the customary rate.

The problems of land value, land valuation and safe investment are all involved in this question. Rather than to argue needlessly about such controversial topics, it is better to recognize their existence and proceed. A workable plan is to use market values of land and current interest rates on long time loans.

Method of distributing the land charge.- A uniform rate per acre on all acres of approximately uniform value is the easiest and most satisfactory basis. If land of widely different values exists on the farm, then this account should be subdivided and a separate record made for each class of land, such as dryland and irrigated land on the same farm. For most farms the one class will be sufficient. Usually the areas of road, farmstead, waste and unused land should be omitted from the area used as a basis for distributing the land charge. Productive lands will support the farm, hence they might logically carry the burden of cost. The reported value of 160 acres, with 150 acres in crops, would be distributed to the 150 acres. The value of farmstead land would then be distributed to the cropped area or kept separate as a livestock corral charge, if that seemed to aid in analysis.

If the entire area is used as a basis, the 10 acres in this case would have a land charge but no means of earning a return, other than thru allocation to livestock, of which, normally, a large part has been work horses. The resulting loss might be interesting to note but deceptive in its effect upon production. Better to saddle this dead weight of cost on the productive area, then a profit will be above all land charges. If part of this went to horses, it would mean an increase in cost of horse work and a return of the charge to the crops in large part.

When crops have been analyzed, it will be a simple matter to determine the "earning power" of each crop. If a particular crop is unable to pay for the use of land at the uniform rate per acre, the account can be analyzed to find what rate of return the crop can earn.

Buildings

The purpose here is to find the cost of buildings, not to determine the earning power of buildings. Buildings are in the nature of a service agency, needed, but not the most important cause of gain or loss from livestock.

The items to include in the building account should include depreciation, interest on the buildings, all repairs and maintenance, insurance, labor on repairs,

and any item of current expense. Ordinarily, the rate of interest should be identical with that used in the land account, altho some authorities argue for a higher rate on all improvements and machinery.

The method of distributing this charge must depend upon conditions. Where a building is used exclusively by one class of livestock or by one crop, the entire cost of that individual building can be charged directly to that enterprise.

Where repairs and insurance and other items are handled for all buildings together, and this is the usual practice, then all building costs should be assembled in total before prorating. In this case, the value of the building used by a particular enterprise is the easiest basis for distributing this total charge.

Where two classes of livestock use the same building, for example, horses and cattle, possibly the number of animal units of each class of livestock will prove to be the most satisfactory basis for distribution.

Where several kinds of grain are stored in one granary, the cubic space used by each, i.e., the bin capacity, may prove to be the most satisfactory basis for distribution. Here, as in many other cases, a knowledge of the farm, the use to be made of the study, and good judgment are required to avoid useless calculations.

New buildings. - When a new building is constructed, it is a convenience to have a special account for all items dealing with this building. This will avoid confusion between construction costs and the maintenance of old buildings. When the building is completed, the total accumulated costs can be closed out and transferred to the regular building account as the inventory cost of the new building.

Stock Water

Wells, pumps and troughs represent a special form of buildings or farm improvements. If livestock is a major farm enterprise, it is desirable to have these water costs kept separate. Interest should be charged where the well and pump investment can be separated from other building investments. Fuel for pumping, repairs, labor, depreciation, etc., should be included.

If several classes of livestock use water, the animal unit method may be used for distributing the charge.

If the same well is used by the household and the livestock, some more or less arbitrary division must be made between them. The same applies where the garden is irrigated from the well.

Some students have suggested the "gallons per head per day" as a possible basis. This is a guess and may be as far from the facts as an arbitrary division.

Irrigation

This is a difficult charge to distribute. It is composed of early direct flow river or pump water and late storage water. The cost per acre-foot varies widely for these two. Sometimes both run in the ditch together. Sometimes both are used on the same crop. There is a wide variation in the number of times different crops are irrigated. There is some variation in the amount of water applied per acre during one irrigation as between crops. There is considerable variation in the amount of water applied per acre at different times of the year. Extra water may be purchased. For these reasons, it is not satisfactory to divide the cost

of water by the acres irrigated. Nor is it entirely satisfactory to keep a separate account for early and late water and distribute each of these on the acre basis.

An accurate water measuring device would solve the question of the actual amount of water used on each crop but it would require a timekeeper to record the changes, and might not distinguish between early and late without careful checking.

Faced with these variables, the method used was to multiply each crop area by the number of times it was irrigated and secure a computed "area irrigated once" for the farm. The total water charge was then distributed on this basis of "per acre irrigated once." If one crop had 6 irrigations and another only 2, the cost per acre of crop was in that ratio, i.e., 6 to 2. If accurate information is available, this could be used as a basis separately for early and for later water, which would be an improvement over putting all water costs together.

Labor for irrigation was charged directly to each crop on an hour basis. But this again presents a question, i.e., total number of hours that the water ran or actual number of hours setting and changing the water. Some men, with smooth fields can set a run of water and then cultivate or do other work until time to move the set. Others, on more rolling land, find it necessary to stand over the water with a shovel. Again, men stay with the water in the day time, then "turn it on the alfalfa" for the night, letting it waste at the lower end of the field if it happens to come too fast for the land to soak it up.

Here, again, a timekeeper would be needed to find the actual use of time. The farmer is the best judge of the way he uses his time. Consequently, the basis for charging man labor for irrigation was the total number of hours reported as worked by the farmer, regardless of how long the water ran. This indicates the reason why man hours would not be a safe guide for distributing the cost of water. It also lends support to the statement that "statistics are personal", i.e., some person has compiled them. Costs are very definitely personal. Someone must decide what to do with the endless joint costs on a farm. Few farmers have the time or patience to puzzle over the matter. Our purpose in discussing the problem is to emphasize the idea that any summary of farm costs must of necessity be a summary of someone's more or less arbitrary division of joint costs.

Man Labor

The rate per hour for the use of man labor may be handled simply or in as complicated manner as one may desire. The total cost of all man labor divided by the total hours worked will give a simple, uniform rate for distributing man labor costs. Simple - yet the hours may be charged for at some standard rate. For example, when local rates are 25 cents per hour, all labor can be distributed at that rate, regardless of the actual cost on the individual farm.

With double entry bookkeeping and complete costs, there is some advantage in using this standard or average rate. When all the labor on the farm has been prorated and the total compared with the total costs of labor, a profit in the labor account would mean that this farmer secured labor at a lower rate per hour than the average. A loss would mean that his labor cost was more than the average. This calls attention immediately to the profit or loss as a matter of comparative labor expense. It also permits a more satisfactory comparison between farmers in regard to crop costs. With a uniform rate per hour for labor, differences between farmers will be due to differences in amounts of labor and to other differences and not due to changes in the rate used in distributing labor.

In contrast to these simple methods of prorating labor costs, there are varying degrees of complication. Some students favor charging a separate rate for each man in order to distinguish between high-priced and low-priced labor. This may aid in securing a high degree of accuracy in distributing actual cash costs, but it is of questionable virtue in the final study of crop costs. Too much of the variation in crop cost will then depend upon the "luck" as to the use of high-priced or low-priced labor on that particular crop. If high-priced and low-priced labor were a matter of skill, this would result in increased accuracy, but wages and skill have small relationship in farming.

Others favor a separate rate for man labor for each month or season of the year. This also makes a lot of record keeping and confuses the study of crop costs.

Others stress the problem of the operator and his family, claiming that their labor may have little or no value since there is nothing else for them to do and consequently they would work for little or no wage. This is in the nature of admitting defeat. If farming can not pay wages, why bother to work at it. The purpose of cost accounts should be to find those crops which will pay a man for growing them, not to find at how low a wage he can work. Farmers can find plenty of things to do that do not bring in an income without anyone helping them to find more.

One advantage of using standard rates should be noted. The actual rate can be found only at the end of the period studied, consequently all calculations must be delayed till the end of the year. With standard rates, labor can be calculated as the work progresses, or the labor cost of any early spring work can be calculated at once and used to guide in decisions during the year; thus increasing the value of the analysis.

Charges for Individual Operations

When labor costs are charged to crops, the easiest method is to total all hours spent on the crop and make one charge for the labor or horses or machinery.

At times some knowledge as to the cost of individual operations is helpful. Plowing, seedbed preparation, seeding, cultivation, and harvest can be studied as separate operations. When this is done, the rates to use for labor and other costs will be either the actual rate for the previous year or standard rates. If much work is done for others so that the rates are important, the current market rates for such work may be used, but care should be exercised in checking actual costs to avoid working at a loss.

Horses

A standard rate per hour for horse time is an advantage because it quickly shows whether this farm is able to furnish horse labor at that rate. The difference between all costs and the income from horse work at a uniform rate, if there is a difference, means either that this farmer has more costs or has handled his horses more efficiently than the average. In these days of farm tractors and trucks such a comparison may be more valuable than a study of a crop.

If actual cost per hour was calculated for the farm, it would be easy to overlook the high cost of horse work and lay the blame on the crop.

Many of the comments as to possible ways of handling man labor are pertinent in connection with horse hours. There is one added point: many items of horse cost are really farm raised and in the nature of indirect cash expense,

rather than direct, out-of-pocket cash cost. Accordingly, there is a tendency to overlook the equivalent cash value. Pursued to its ultimate conclusion, this might result in a very low horse rate, since these feeds might waste if not consumed by the horse and hence have not market value. A rigid adherence to this "opportunity cost" viewpoint would require endless analysis of items of horse expense to discover which could and which could not be marketed. Actually, of course, if all horses were removed from farms, few of these feeds could be marketed as men have learned to their sorrow as tractors and trucks have increased. Also these feeds have been produced at increased losses by farmers. The vicious circle is endless. Therefore, the author prefers a standard horse rate or the use of market prices for feeds as best serving a farmer's interests.

Equipment

These costs seem easy to assemble but the distribution of them is far from simple. At the present time, equipment is drawn by horses or tractors, it may be special purpose equipment such as a potato digger, or a general purpose tool such as a plow. It may be designed for attachment to some other machine such as a section of harrow following a plow, or it may be built to attach to a truck or automobile like the recent buck rakes. It may be used by hand (forks and shovels), it may be used for non-farm purposes such as wagons used in moving furniture. Some equipment is costly, with high repair charges; other equipment is as simple as a piece of bent steel. Some equipment works for both crops and livestock.

The one who attempts to consider all these variables in arriving at an accurate distribution will soon find that it is taking as much time to prorate a few hundred dollars of equipment cost as it would take to analyze an entire farm business. This is the road to madness, not to sound business policy.

Total equipment costs might be assembled and prorated uniformly on an acre basis. This is convenient, but far from satisfactory, especially if much livestock is produced or special crops with special equipment.

Special equipment may be charged directly to the crop and all other equipment charged on an acre basis. This, of course, makes hay land pay for plows and harrows, but it does give a quickly secured figure that can be compared from farm to farm.

The tractor has added confusion to the analysis, as some machines can be drawn by either horses or tractors. Ultimately, farmers will have two distinct groups of equipment: one horse-drawn, the other for tractor use. This will permit some division of cost but does not result in much simplification of the problem. With this division, the cost of all tractor equipment can be prorated on a tractor hour basis. The horse-drawn equipment can be prorated on the basis of horse hours. The basis here assumes that either horses or tractor do haul equipment when they are at work. It is not an accurate method but, like the per acre method, it is convenient.

A desirable method would be to use standard rates for the use of equipment. But the problem is to find these standard rates. Naturally, they will vary with the cost of machines and with the area covered. Probably such rates can be calculated by Experiment Station workers for state use rather than attempt to work them out for individual farms.

The original method of distributing machinery costs was on the basis of horse hours. In northern Colorado studies, that has been modified to make some allowance for tractor equipment.

Automobile

Few automobiles are used directly for any one farm enterprise. Where such is the case, a direct charge on a mileage basis should prove satisfactory. Most farmers consider their automobiles as a necessity for efficient operation of their farms. It also has value for purely personal use. Any division between farm and personal use is usually arbitrary. If the costs were high enough to justify the time and attention, an accurate division could be made on a mileage basis. The common practice is to arbitrarily assume one half the cost for each use. This is transferred to the general farm account for distribution.

Truck

The truck has become a standard piece of farm equipment on many farms. Wide variation exists as to the type of truck used. Some buy new trucks. Other farmers near the larger cities have found that second-hand trucks are satisfactory. In recent years, old trucks and old automobiles have been purchased by farmers and made over into special purpose farm equipment, especially for use in haying. These "trucks" can be charged direct to the hay crop where that is their use.

The problem of distributing truck costs arises from the double method of use, i.e., the truck may be used by the hour as, for example, in hauling hay, where few miles are registered but the truck body is receiving wear and use constantly. Also the truck may be used on a mileage basis, for example, in hauling feed from town to feedlots or in marketing crops.

Early truck models had no speedometer which made analysis on a mileage basis impossible.

Farmers think of their own time on an hourly or daily basis. It is seldom that farmers will keep accurate data on truck mileage for individual work.

Distribution of truck costs resolves itself into a compromise and choice of evils. Where the use is general, and hard to isolate, the general farm account should be the place to handle the cost. Where important work is done for a few crops, the mileage basis is most desirable. Where speedometers are lacking, the hourly basis may give a better distribution than to transfer the truck costs to the general farm account. Some farmers treat the truck the same as the automobile, i.e., they find the total yearly charge and then arbitrarily divide this between several main enterprises such as winter feeding, sugar beets and potatoes, leaving a small portion of cost for "general farm."

Tractor

The tractor costs are comparatively simple to assemble. Their distribution on an hourly basis is fairly easy. The wide choice of type of tractor makes actual costs for the individual farm preferable to standard rates. When more information is available so that standard costs can be secured for each important type of tractor, the use of such rates will have the same advantage as with horses.

There are minor errors in the use of the hourly basis since fuel consumption varies somewhat according to load and speed of operation. With the increased use of rubber tire tractors for road hauling, this error will increase and the mileage basis may be needed to properly handle tractor costs.

There is some question as to the proper method of handling special tractor equipment. If it is all assembled in one account and distributed on a tractor hour basis some error exists. If not too difficult to handle, special equipment should be charged directly to the crop. That will not dispose of seedbed machinery such as plows and harrows. The acre basis is more satisfactory than the tractor hour basis for these machines, unless the hours using these particular machines is used rather than total tractor hours. In fact, where actual tractor hours' use of specific machinery is available, it will prove the most useful basis for prorating. This, of course, means a rate per hour for every subgroup of tractor equipment. As indicated in the equipment accounts, the possibilities are maddening. Hence, one tractor equipment account and one rate per tractor hour for its distribution serves as a compromise between accuracy and convenience.

Threshing Machines

Some farm equipment is of such special use that a separate record is needed to properly handle expenses. Threshing machines may be used entirely on one farm or cooperatively between several farmers, or by one farmer on a custom basis for his neighbors.

To make comparisons valuable, the charge for its use should be on a bushel basis which is prevalent in the community. When this is done it is easy to calculate and the profit or loss in the threshing machine account will tell its own story as to the wisdom or error of its ownership.

Inventory Crop Account (for example, potatoes)

The purpose of accounting is to aid in studying the farm business as a guide to future policies. The division of a potato account into two separate accounts is an excellent example of the benefits from such a policy.

With one account, the final answer of potato charges and returns is spread over 2 years' records, which, in itself, is confusing. Errors of marketing judgment are not disclosed.

With two accounts, the field account ends with the potatoes in the cellar. A question will arise as to "storage costs." Ordinarily, a potato cellar is a necessity in potato production, both for the storage of seed and for the opportunity which it gives for spreading potato sales over a longer period than the few days of harvest. Harvesting can be done quickly, and the marketing at one's pleasure. Consequently, most farm storage costs belong on the field account. Where storage is primarily for seed sale, storage belongs in the "inventory potato account."

This permits a special account with inventory potatoes, which will open with the value of potatoes on hand the first of the year (January 1, for example). Then the labor and equipment expense of sorting, the trucking costs and marketing can be shown separately for these potatoes. Sales can be set against the original inventory value, which should be a close estimate of prevailing market values at harvest or storage time.

A profit or loss from inventory potatoes will show the wisdom or folly of holding potatoes for the winter markets. (See individual crop account comments).

Feed

Where feeds are used for several kinds of livestock it saves confusion to transfer all feeds produced or purchased to a feed account from which they can be distributed to each class of livestock as used.

The chief problems in handling the feed account center around weights and values for feed. For home-grown feeds, these may require a certain amount of estimating. If the same method of estimating is used consistently, the errors will not interfere with prorating the feeds. But if measured weights (hay in stacks, for example) are used for transferring feeds to the feed account and scale weights are used for distributing the feed to livestock, errors are inevitable.

Values, once agreed upon, should go thru the feed account unchanged. No advantage is gained by changing feed prices in order to show the bookkeeping profits or losses in the feed account. The account should be used as a convenient method to aid in accounting for all feed with a minimum of confusion.

When feeds are charged direct to one class of livestock, without using a general feed account, this livestock account will later be credited with some of the feed used for a different class of stock. When one attempts to study the feed used by that particular class of livestock, the first step will be to make adjustments and corrections for these feeds transferred to other accounts and for feeds left unconsumed at the end of the feeding period or year. All these chances of error are eliminated when an intermediary feed account is used.

Feed Grinding

This is an account needed on some farms, especially where a grinder is owned and considerable expense is involved. The charge for use of one's own grinding equipment may be made upon a basis of pounds of feed run thru the grinder and at local "custom rates."

A profit would indicate that it was cheaper to own a grinder than to pay local rates. A loss would indicate how much the farmer was paying for the privilege of having his own equipment to use whenever he needed it.

This grinding cost may be distributed to the livestock directly or it may be transferred to the feed account, and ground feeds charged to livestock at an increased price per hundredweight to cover grinding charges. There is some advantage in making a direct charge to livestock which will keep all feeds at the same rate and simplify any feed comparisons which might be made in studying the business.

Pasture

The distribution of use of pasture is frequently based upon the farmer's estimate of the acreage or values to be charged to each class of livestock. Where the aim is to close the account at cost the charge may be made on a percentage basis, or on an animal unit basis, or on a per head per day or month basis, depending upon the completeness of available records and desire for accuracy.

Where the aim is to find the cost and value of pasture, commonly used cash rental rates either per acre or per head per month can be used. The profit or loss from the pasture account will show how closely these common rates agree with the accumulated pasture costs.

Where pasture is important, some effort should be made to find the animal weights which were secured from the pasture, and some study should be made of the condition of pasture and allowance made for its depreciation. For example, a special seeding of a supposedly long time pasture was overgrazed and destroyed in 2 years. Customary pasture rates for grazing told only part of the story for this pasture.

Where new seeding has kept the land out of use for a year, the year's cost should either be treated as an increase in the land investment charge (where the pasture is to be permanent) or these costs may be totalled and prorated over a period of years to avoid a heavy pasture charge one year and little or no costs the next.

Real Estate Taxes

At first glance this account presents little difficulty. It has several phases, however, which are confusing. For example, "what tax" is meant? Is it the tax paid in the current year? Before assuming this to be the case, consider the problem presented by a change in area owned so that a tax assessed one year on 100 acres is paid the next year on 200 acres, because meanwhile 100 acres have been purchased under terms that the seller pays the tax for that year. Would a tax on 100 acres, prorated on 200 acres, be a sound basis for studying costs? This difficulty may be evaded by using the tax assessed as the one to prorate in connection with the year's costs, even though the actual payment of that tax may be during the following year. This is equivalent to charging for machinery repairs when they are purchased, rather than when they are paid for. It avoids the question of "charge accounts."

Another problem is the question of land vs. improvement taxes. As tax bills are rendered the assessed values of land and improvements are assembled and the total tax bill calculated. This is the amount paid. It is not easy to separate the tax when securing data from farmers. For this reason, the tendency has been to use the real estate tax as reported and distribute it to the productive land, even though it does include a building tax. Where this will result in a large error, the better plan will be to dig into the record and make a separation so that building taxes will reach the building account and land taxes will be prorated to crops.

Personal Taxes

The same questions arise here as with real estate taxes in regard to "what tax is meant?"

There is no easy method for distributing this tax, unless one is satisfied with lump sum guesses. The only accurate basis is the assessed valuation of each subdivision of personal property. Either that or evade the whole question by transferring the personal tax to the general farm account for final distribution.

Manure

The value of manure produced and accounted for, the use of manure spreaders or other special manure equipment, and the cost of all labor and power used in spreading manure should be totalled.

The time used in applying manure to each crop and the amount of manure spread should be known.

With all of these facts, the question is, How shall the manure cost be prorated? The easy answer is to charge it directly to the crop on which it was applied. But a moment's thought will raise some question as to the desirability or accuracy of this method. Manure affects crop yields over a period of years. It is putting a heavy load on one year's crop to make it carry the full load. There is one case where this might be a desirable method. For example, sugar beets require a fairly long rotation of 5 to 7 years. Farmers usually apply manure direct on sugar beets. Considering the rotation requirements of the crop, it would simplify accounting to give the entire charge to sugar beets. Either that or use the entire rotation as the unit of cost. More will be said about this in connection with the costs for individual crops.

Another method might be to estimate what part of the manure charge should go directly to the crop on which manure was used (for example, one half) and hold the balance of the year's cost until the next year and so spread the charge over 3 or 4 years of crops on that particular field. This is somewhat in agreement with the benefits, but it soon runs into a complicated system of accounting with 3 or 4 years' manure records requiring special treatment with each year and some fine chances for error in handling, or confusion as to a particular crop or field.

There is another method of distributing manure costs which approaches the subject from a different angle. Each crop removes plant food from the soil. Over a period of years the farmer will find it necessary to make some restoration of these plant foods if he is to maintain crop yields. With this idea in mind, students have calculated a comparative weight to show the plant food removed per ton by the commonly grown crops. Using this as a base, the total plant food removed by the crops on a farm can be used as a basis for distributing the manure charge. Here the cost will be charged, not as to direct use but rather as to fertility losses from the individual crops. If the farmer manures each field of his farm, he will replace a large proportion of this plant food and the individual crops will "pay for this replacement" thru their manure charge based upon the amount of fertility that that crop removed.

This method has the further advantage that each year's manure charge is distributed and ended, with no complicated carryover to following years. Either this, or the rotation basis, or a full charge to the key crop of the rotation offers the most usable method of distributing manure costs.

By-Products

Every farm has crop residues, stubble pasture, straw, beet tops, bean straw, weeds along ditch banks and other waste and by-product materials. What to do with them? Some farmers burn their straw. Others feed it and use it for bedding. Some farmers use their manure carefully; others let it decay, leach away and vanish.

These by-products are added values from specific crops or they are lost. They permit reduced livestock feed costs, they are left to die and blow away with winter wind, or they are burned to "clear the field."

A special account for these items aids in emphasizing their importance and clearly shows whether use has been made of them. The items can be analyzed and studied in any way that appeals to the individual. Beet tops can be shown as an added value from the crop or merely accumulated in the by-product account. Alfalfa aftermath pasture can be treated in the same way. Manure may be credited to the livestock producing it - where that can be done - or shown as another by-product.

These by-products should be distributed to the livestock or other enterprise using them. Their total will show a "gain" or income which this farmer secured by a wise use of these waste products.

"Wise use" needs special mention. The farmer who feeds waste products adds to his income. But the farmer who leans too heavily upon by-products may discover that he has put himself in a poor position to survive adversity. For example, beet tops and stubble pasture offer a low cost means either of roughing cattle thru the winter or of supplementing the regular feed for fattening livestock. If no other feeds are available, however, and heavy snow covers the feed, the farmer may discover to his cost that he is short of feed and must pay high prices to get feed for horses or milk cows.

A reserve of feed should be available for such emergencies. In good weather, the by-products carry the livestock. In stormy weather, other feed is ready for use.

This is not a problem peculiar to a study of a by-product account. It deals with the matter of "taking thought" and being one jump ahead of trouble.

Corn stalks can be pastured down, thus roughing cattle through the winter. But deep snow may cause a loss of all such feed. This, if a frequent occurrence, would justify harvesting the corn fodder rather than pasturing it. In the same way, farmers have concluded that beet tops are too valuable a feed to leave to be trampled into the soil. They are piled and hauled to the livestock, thus avoiding excess sand that is consumed by cattle as they dig the tops out of the trampled soil.

Off Farm

Where considerable work is done for others off the farm, a special record is desirable. To this account may be charged the time of men, horses and equipment at actual cost or standard cost, whichever is selected as a basis of analysis. Then actual cash receipts for this off farm work should be credited to the account. A loss or gain will be significant as a guide to continuing the practice of working for others.

Explanatory statements of the conditions under which this work is done, and of its effect upon one's own business, should be made. For example, if, in working for someone else, grain is left standing until it shatters when harvested, the net result of working for others must include the loss of one's own grain due to neglect.

Fall Labor

Working in the autumn, either spreading manure or plowing, is an expense that belongs to next year's crop. Since the exact crop grown "next year" is a question finally answered several months after the fall work is done, the logical thing to do is to keep a separate account of the values of man, horse, equipment or other costs of the work done in the fall. This total may show at the end of the year as an inventory of work done.

When the next year's crop is decided upon, this inventory can be entered as an opening charge to the crop.

Where winter wheat is grown, a special account should be used for this crop, as the question of "what crop?" is settled, and there is no need for a fall labor entry.

Interest

This account for most farmers may include interest payments on notes and mortgages as charges, and the credits of calculated interest which have been charged to land, buildings, and other accounts which deal with inventoried items.

If the interest paid is to be charged at one rate, and the calculated interest on the farm business is to be credited to interest at a different rate, there may be some advantage in having two interest accounts. One will be all "cost" and will show a "loss" at the end of the year. The other will be all "profit."

With both of these in the same account, the balance of the interest account will reflect the interest earned by the farmer upon his equity in the business. Even where different interest rates are paid as compared to those used for calculated interest, the net of the interest account will show whether the farmer has a "net profit" from interest or whether he is paying out more interest than he is distributing to his productive enterprises.

General Farm or Overhead

Either name may be used. The essential point is a clear understanding of the need for this account rather than some arbitrary opinion as to how it should be named. Here one should accumulate all charges and expenses for operating the farm, which cannot be charged directly to some particular enterprise. Items that would normally be charged to general farm are: - labor in repairing fences, making roadways, clearing irrigation ditches, cash paid for telephone or electric lights, association dues, farm papers, items of general farm repair, use of automobile and truck where it is difficult to make a direct charge to some account. No matter how carefully a farmer watches his expenses there will be many "general farm" items.

When they have been totalled for the year, the next question is, How to distribute them? The method to use will vary somewhat with the circumstances. So far as possible they should be distributed to the productive (i. e., income) enterprises on the farm, such as crops or livestock. If the farm is primarily a cash crop farm, a rate per acre of crops may be the most useful basis. If the farm is primarily a livestock farm, a rate per animal unit, or possibly a rate per head, may be satisfactory. Farmers who have both crops and livestock will find that neither of these methods are satisfactory.

The number of man hours on productive enterprises is a fairly satisfactory basis for distributing general farm charges to both crops and livestock, as these are the enterprises which must pay the bill if the farmer is to show a profit.

Personal and Household

This may be one account or it may be divided into two accounts. Its chief uses are as a means of accounting for cash spent by the family and for farm products used on the farm, also as a source of operator's and family labor charged to the farm.

It is not strictly a "farm account". The personal and household expenses may use all the available cash during the year. At the end of the year, this account, under those conditions, would show a large loss and the entire business might show a loss.

All the other accounts should be totalled separately in order to find the final farm profit or loss. The personal and household account will show where these farm profits were spent. At the same time this account will act as a check upon all money spent during the year, and may be studied with as much benefit as that derived from the study of any individual farm account.

Notes and Accounts Payable

This is a convenient account for entering all money borrowed, and all payments made on notes or mortgages. From year to year this account will serve as a ready reference to indicate whether one is reducing his indebtedness or going deeper and deeper in debt.

Where large accounts are run with several merchants, it will aid in checking upon one's debts to keep a separate account with each of such creditors. This account will then serve as a summary or control record of all outstanding indebtedness, whether long time or as open accounts.

Notes and Accounts Receivable

This is likewise a convenient place to summarize all loans made, or sales where payment is deferred. When a horse is sold, for example, and a note taken as payment, the horse record is complete. The future success in collecting the note should show in this account and should not be reflected as a "loss on bad accounts" charged to horses.

Dairymen will need separate accounts with each customer or some other device for keeping an accurate statement for the individual customer. This "notes and accounts receivable" will then serve as a condensed summary account of all these individual accounts or, as the bookkeeper would say, "it will be a control account."

Cash Account

Where one desires a complete check upon cash, this account is necessary. It will be charged with all money received and credited with all payments made. At the end of the year, its balance should agree with the "cash on hand" either in the pocket or in the bank.

Personal Investments

Where the income is sufficient to permit investments outside the farm business, this will be a convenient account to aid in keeping such investment records.

Individual Crop Accounts

Each of these should be analyzed to find the underlying causes of profit or loss. They can be studied to find what interest rate the crop has earned upon land investments, or what rate per hour of man labor has been earned, or what income has been realized per dollar of total charges, or what profit or loss shows per unit of crop, or what sale price was needed to break even.

Where the same crop is grown in several separate fields, or by several different methods, it may be desirable to keep a separate account for each of these.

There is occasionally an advantage in closing this account at harvest time so that the problem of storage or use of the crop may be studied separately in a crop inventory account or in a feed account. The problems here involved are largely marketing in nature, while the problems in field production deal with efficient use of production practices and causes for variation in yield. By keeping all storage and marketing analysis in a separate account, it is easier to study field practices relating to each crop. (See comments on "Inventory Crop Accounts.")

Individual Livestock Accounts

These offer the same opportunity for study mentioned in connection with crops. The number of head of livestock or the hundredweight of gain produced is the basis of comparison which will be most useful. The method of analysis should be selected that will tell the farmer most effectively what he needs to know.

Production Records

All the previous accounts have been handled upon a money basis. Some separate record is usually helpful to show the quantities of livestock and livestock products produced. Milk per hundredweight, eggs per hen, pigs per sow, are all necessary information in studying a kind of livestock or in studying the individual animals.

Similar information is needed about crop production - total production, waste, grades of crop, quantities sold and consumed at home, all tell part of the story of successful crop production.

Time Records

The discussion of man, horse, tractor and other accounts assumed that the hours or days of work were a matter of record. The detail involved in securing such records may be as exacting and may result in as much chance for error and oversight as any in connection with cash transactions. In fact, most farmers "bog down" when it comes to keeping an accurate record of the hours of time for all parts of their farm business.

The fact remains, however, that such details are needed if one intends to study the business with any degree of accuracy.

There is one possible alternative which again raises the question of standards. With a record available as to width of machine, number of times this operation is performed, speed of power used and other basic data, it is possible to estimate the hours normally required to do the work. This calculated figure may be used as a standard or it can be compared with actual hours as kept from day to day, to determine reasons for variation.

Cautions in Using Farm Accounts

One who has followed the discussion this far must be impressed with the confusion that exists in regard to accumulating or distributing each separate record of cost. In many instances the selection of a basis for prorating these separate charges may appear to be purely arbitrary. It is true that accounts are, in a very real sense, personal. That is, they depend upon some person, both for decision and as to how to handle them, and also for method of analysis.

Since this is true, one should hesitate to accept any statement as to the cost of producing any farm product until he has looked behind the scenes and

discovered the methods used in accumulating these "costs."

Some will conclude that all cost analysis is a waste of time and abandon the whole business. Others will see in cost accounts a picture of the complex nature of the farm business and use them as one more clue to aid in working out a balanced, successful farm business. Others will look to their experiment station for any calculation of costs and will accept the conclusions which are published by experiment stations, without question as to the methods used in assembling these costs.

Some public officials have been critical of the findings of experiment stations. Some farmers also have questioned the results, since most studies show little or no profit from the usual crops and cropping methods on farms. The question is asked, If farming is such a poorly paid business, why do farmers continue to operate?

There is some argument on both sides of this question. The confusion comes chiefly from that question, Why do farmers continue to operate at a loss? Many fail to consider the problem carefully.

First.- "Cost" and "loss" need careful definition. The discussion of individual items of cost shows that labor, horses, etc., are usually charged to crops at customary local rates or at average cost per hour. The work of the operator and his family is charged at the wage paid for hired labor. This results in a charge that is similar on all farms and aids in comparing results on different farms. The result on individual crops, if a loss, means that this crop has been unable to pay these current rates for labor.

Second.-Possible choices that farmer can make. When the final results are a loss, the farmer may say, "This crop should be eliminated." Or, "Labor should be put on some other crop." He is more inclined to say, "What else is there for me to do?" And that is nearer the truth. If there is no better work or no chance to hire out for wages off the farm, the wise farmer finds that a crop which fails to pay customary wages may pay some wage, and this low wage for time spent increases the total year's income compared to doing nothing. The farmer tries to find the most profitable use for his time throughout the year. At seasons when nothing else is available, a low return is better than nothing. Here is an apparent confusion between costs charged at current rates, and returns that indicate the need for lower rates. There would be no confusion if people understood the meaning and use of costs. It is correct to show costs on the basis of current rates. That aids in understanding the normal requirements in crop production. The loss from this crop gives a useful measure of how far below normal wage rates the farmer is willing to go before he drops this crop or starts concerted action aimed at remedying the situation. This of course assumes that the cause of the loss is outside the immediate control of the farmer. Losses that are due to inefficient methods, poor yields, poor quality production, insects, disease, or shortage of water emphasize the need for changes in methods of production.

There is no real inconsistency between reported losses and continued production by farmers. There is an incentive to try and improve conditions and to seek other uses of time which will pay better wages.

Sunk Costs

A somewhat similar situation arises from the fact that after a decision has been made, and money spent either for equipment, land, or in the seeding and early care of a crop, it is impossible to stop or withdraw from production.

Time and money have been "sunk" in the crop. The farmer knows that the only way to get back any of this investment is to "keep right on to the end of the road" as Harry Lauder used to sing it; to "throw good money after bad" as the business man states it. But in any event, to finish the job that he started and get what he can from it.

Suppose, for example, that a farmer has his money tied up in potatoes and the price is 30 cents per hundredweight at digging time. He may know from past experience that he can buy sacks, pay for digging, picking and hauling potatoes for 18 cents per hundredweight. That will leave 12 cents per hundredweight to apply on the "sunk costs" up to harvest time. If he leaves the potatoes in the field undug, he will lose 12 cents per hundredweight that he could get by digging. This is an entirely different picture than to say that he has lost 30 cents per hundredweight on the crop, because it cost 60 cents to produce and the price was 30 cents. True enough, but 42 cents were sunk when it came time to dig. By harvesting the potatoes, 12 cents of this was saved. Not a happy prospect, but a real one.

Men act in ways that seem foolish but a closer inspection will show that they are doing the best they can under the circumstances. Sunk costs are real in farming. They explain many otherwise baffling decisions.

Winter Feeding

This presents a situation slightly different from crop production. Winter feeding is in some ways a separate business, in that a farmer does not have to feed. He can grow crops for sale. The winter feeding enterprise offers a market for feeds grown on the farm. It also offers a market for feeds that have no other market. Beet tops, straw, stubble pasture and corn fodder would have little cash value if no one fed. They would be valuable for building up soil organic matter but are bulky to handle and slow to decompose. When fed and reduced to manure they are easier to handle. Men, horses and machinery have little to do in the winter time. Feeding offers employment.

The actual feeding operation might show little or no profit when market rates are charged for feed, by-products, labor, etc., and yet it would be the cause of a larger total income. As long as it paid something for the waste products used, it would increase the cash income. The manure would aid in increasing the yields of all crops, thus adding to the income. For these reasons, plus the uncertainty of price, few farmers abandon winter feeding when they have had losses. "Next year" may bring profits, and every year uses idle time and waste feeds.

Conclusion

A review of the individual accounts as discussed, indicates how cost accounting differs from simple bookkeeping or cash records. It also illustrates the amount of more or less arbitrary allocation of expense which is involved. To some, these are sufficient reasons for discarding all cost calculation.

The writer prefers a different viewpoint. Farmers in the long run should secure from their products a price sufficient to cover their costs. What farmers mean or what public officials mean by "costs" is seldom defined. If a study of this problem does no more than reduce the assurance of those who discuss it, it will be time well spent. More than that, in the case of individual parts of the business such as power, labor or other "service", the use of a cost and return analysis (even if "standard rates" are used) will help the farmer to decide upon future action. In the last analysis that is the entire purpose of such a study - to improve one's judgment and ability to discover flaws in his methods. Cost analysis is merely one more tool, valuable in the hands of careful workers, but a tool that can very easily be misused.