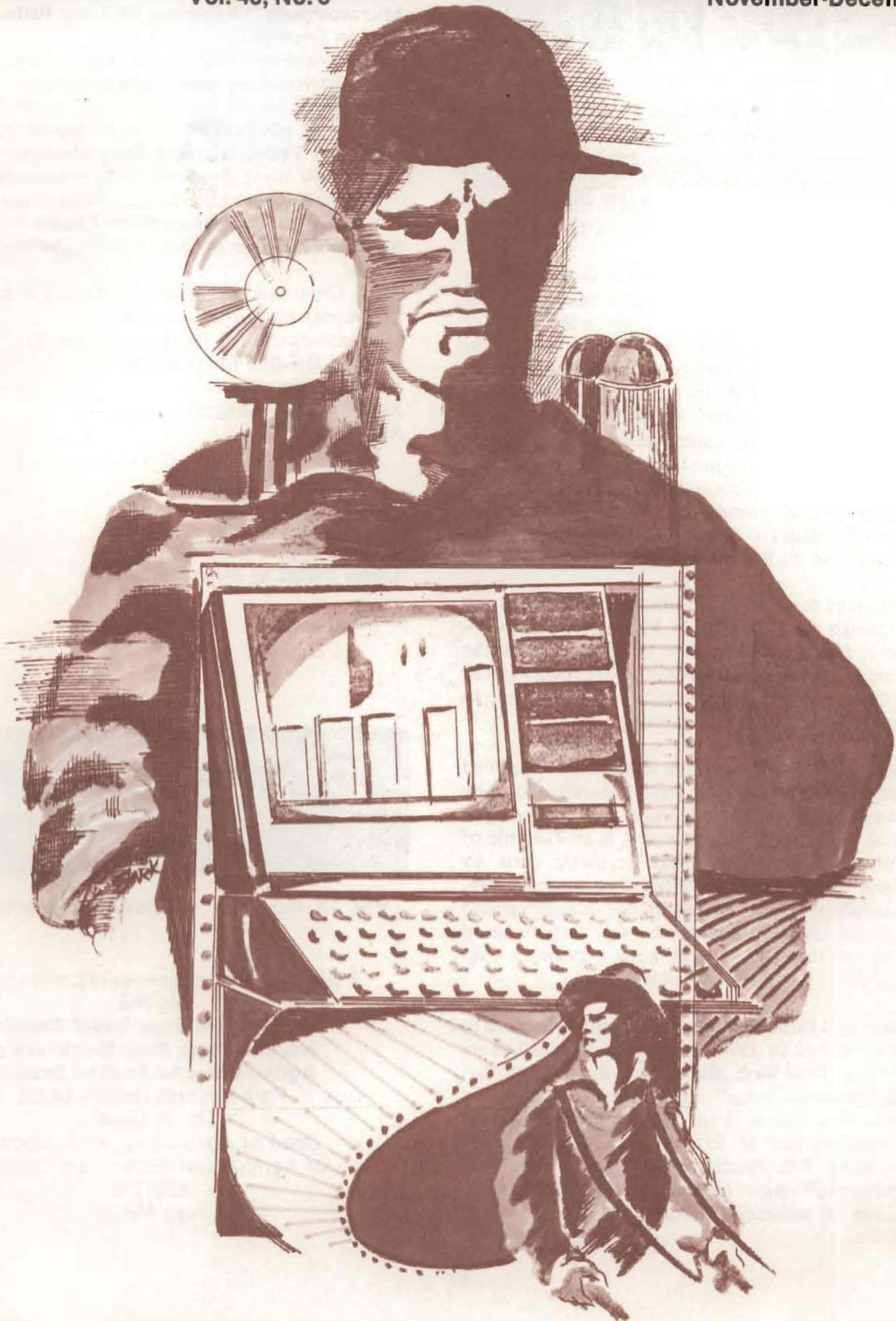# NORTH DAKOTA
Farm Research

Bimonthly
Bulletin

Vol. 43, No. 3

November-December 1985

Guest Column

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The cover story of North Dakota Farm Research 15 years ago discussed computer applications. In that article, Clayton Haugse described how computers were being used in research in various departments at NDSU. In this guest column I am priviledged to introduce you to an entire issue devoted to the application of computers on farms.

During the intervening years, changes in the technology of computers and other electronic gadgets have been profound. The development of the microchip as the basis for miniturization of computers is considered major technological development. This breakthrough has led to computers today that will fit in a briefcase and possess comparable "computing power" to those found only in big business or on university campuses less than a decade ago. This miniturization has moved computing from environmentally controlled laboratories to almost anywhere you have a source of electrical power. This increased mobility opens the doors to computer applications that will change many of the traditional methods of farming.

The adoption of most newly developed technologies can be traced through three phases. In Phase I, example applications are developed primarily to display what the gadget can do. Tasks are performed that are highly suited to the new device—but may have little purpose except to raise awareness about the new technology.

During Phase II of adoption, the technology is applied to commonly known tasks that were generally done by human power, or by a less advanced technology. The broad area of electronic data processing is an example of using computer power to do tasks formerly done by humans. Phase III, which is unfolding all around us today, is when the newly emerged technology becomes integrated with other technologies to change the way they function and routinely perform tasks that were previously considered impractical or even impossible.

Much larger and faster computers continue to be used in research as described in 1970 article, but in much more complex and beneficial ways. Researchers are currently exploiting the "near thinking" capabilities developed by computer scientists. Phase II and III applications in both classroom teaching and in Extension programming are entering the scene. The blending of computers using "artificial intelligence" with advancing video technology holds promose of enhancing already effective teaching

In This Issue

Cover design by Steve Stark.

NORTH DAKOTA
Farm Research
Bimonthly Bulletin

processes for continual learning by students of all ages wherever they may be.

The management and marketing functions of the farm business are being improved both by the collection and storage of facts about the business and the environment in which it exists. More important, however, is the analytic capability afforded the farmer in rapidly exploring alternate courses of action to determine the most effective in meeting overall objectives.

Some examples of computer applications in farming are the detailed monitoring and precise controlling of environmental systems for poultry and livestock; automated feeding systems in dairies that allow each cow to be fed the optimal amount of concentrate based on her individual production level; and irrigation and grain conditioning systems that are computer controlled to operate with precision based on constant monitoring of soil or grain moisture conditions and all relevant environmental factors. Many of the "futuristic" robotic applications in agriculture will come about through the innovative linking of computer precision with other technologies.

This issue of North Dakota Farm Research is devoted to the theme of "Computer Applications in Agriculture." I hope you find these articles informative and interesting. I firmly believe in the philosophy underlying the Land Grant University; that continuing interchange between the people and their university is one of the important keys to human progress. I also believe we're in a new age of innovation where many people will "think up" new ways to link computer power to the vast array of mechanical technology already in place and allow a new level of human productivity. I hope these articles cause each of you to think about how integrating computer power into the tasks you perform could make your life a little more enjoyable.

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