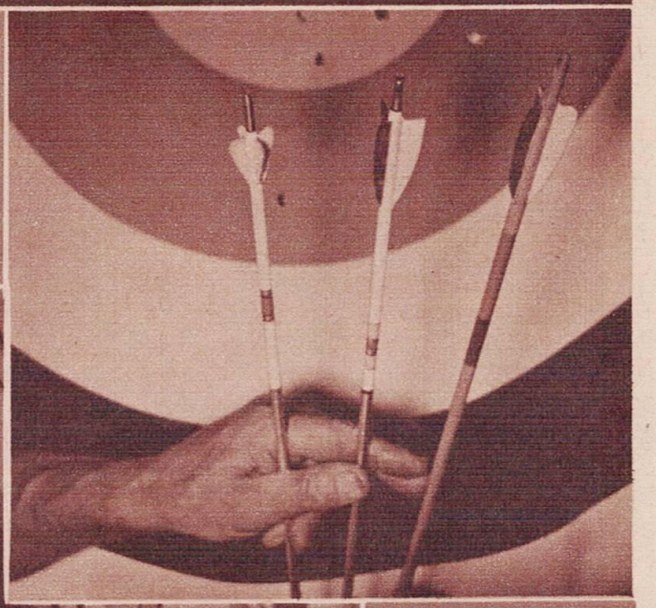
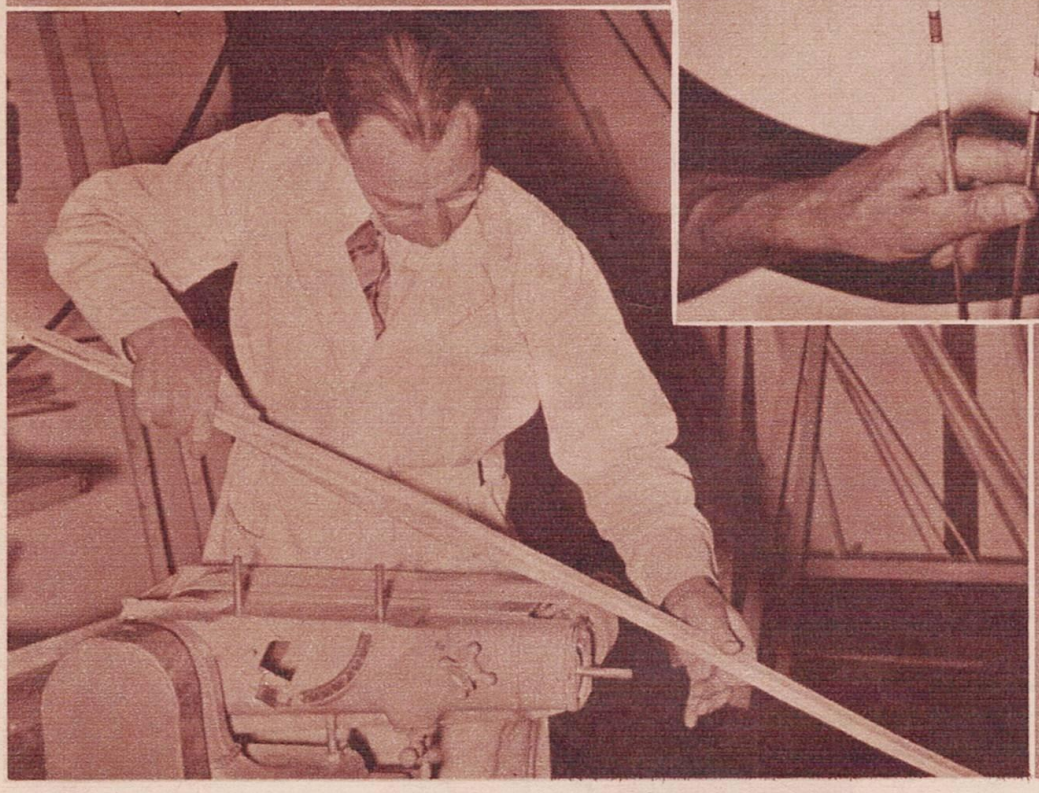
An Inventor Takes Up

by Walter E. Burton

What happens to an ancient art when an inventor with modern mechanical experience takes it up is strikingly demonstrated by Bill Folberth!





Above are three types of arrows. At the left is a four-vaned arrow with which Bill Folberth is experimenting; center, a needle-nock aluminum arrow developed by Folberth; and right, a conventional type of wooden arrow.

Left: Bill Folberth, the inventor who took up archery, is shown here sanding to shape one of the center-notched bows.

BILL FOLBERTH of Cleveland, Ohio, is one-half of a unique inventing team. His brother, Fred, is the other half. For over thirty years, Fred and Bill have been working together, developing inventions, getting patents jointly, and operating on a joint bank account their inventive genius created.

Twelve years or so ago Bill Folberth became interested in archery as a hobby. Immediately, after learning the fundamentals of shooting arrows, he began to investigate the mechanical processes involved, began to wonder why archers have continued for thousands of years to be handicapped by the "archer's paradox" that makes an arrow travel in a curved path instead of a straight one. Before long, he was directing his inventive genius to the developing of better bows and arrows.

One day he clamped a conventional bow in a vise, and began shooting arrows toward the other end of his shop. All the arrows curved left and went out the window. An attempt to discover why resulted in the invention of a center-shot bow that is enabling archers all over the country to reach new heights in accuracy. This bow has a cut-away section at the center, so the arrow travels straight for the target without having to whip around the bow into a curved path.

Another development of Folberth's, which he has not patented, is the needle-nock arrow. This is an aluminum arrow with the nock (notched end) reduced to a small diameter that enables it to leave the string and the fingers without resistance. Greater accuracy is the result. In addition to improving bows and arrows, Folberth developed a new technique of shooting, one that, under a competent instructor, enables the beginner who never had a bow in his hand before to hit the gold of a target within ten minutes.

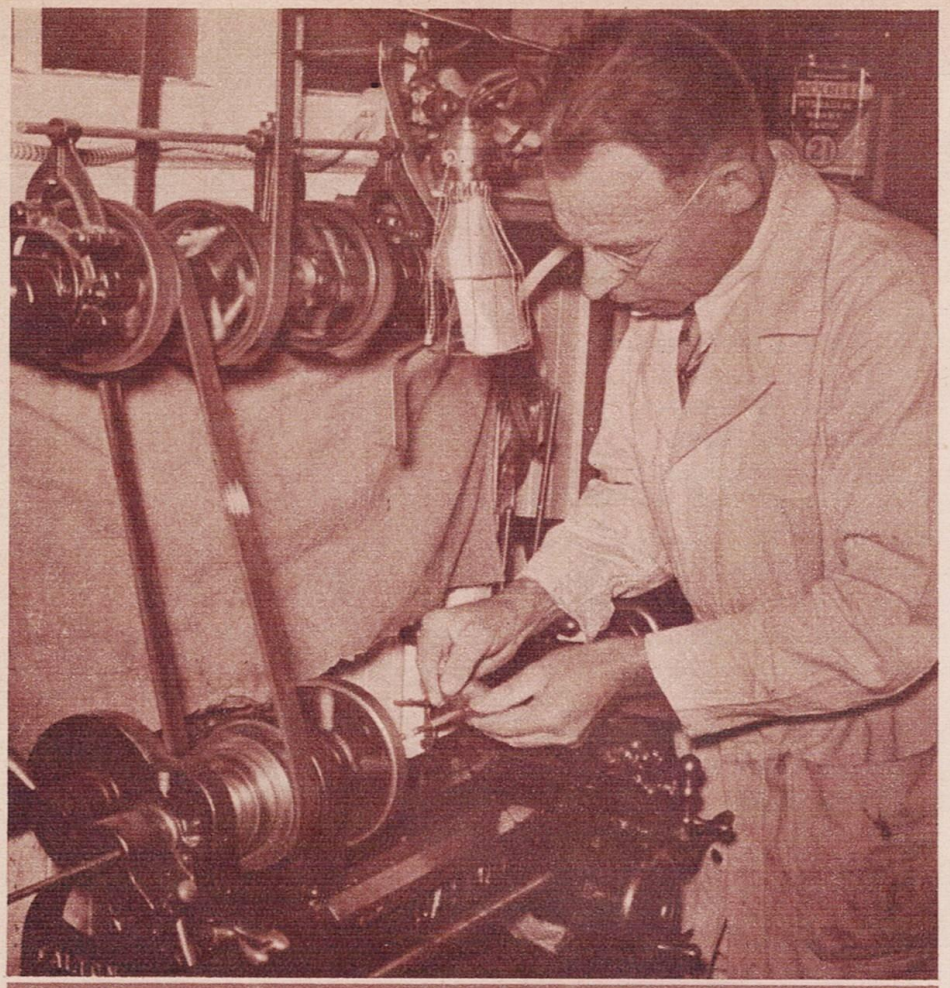
Archery!

In using this method of aiming, the archer pulls the string back until his fingers rest beneath the chin, the string touching the nose and pressing hard against the chin. Thus two fixed "points of reference" are established, the chin and the eyes. On the bow is an adjustable sight, another of Folberth's inventions, which is set up or down or sidewise, until the arrow will hit the center. After that, the archer need only align the sight with the target, without even looking at the arrow. This technique, together with the needle-nock arrow and improved bow, makes archery a pleasure because it is easier to master and is more accurate.

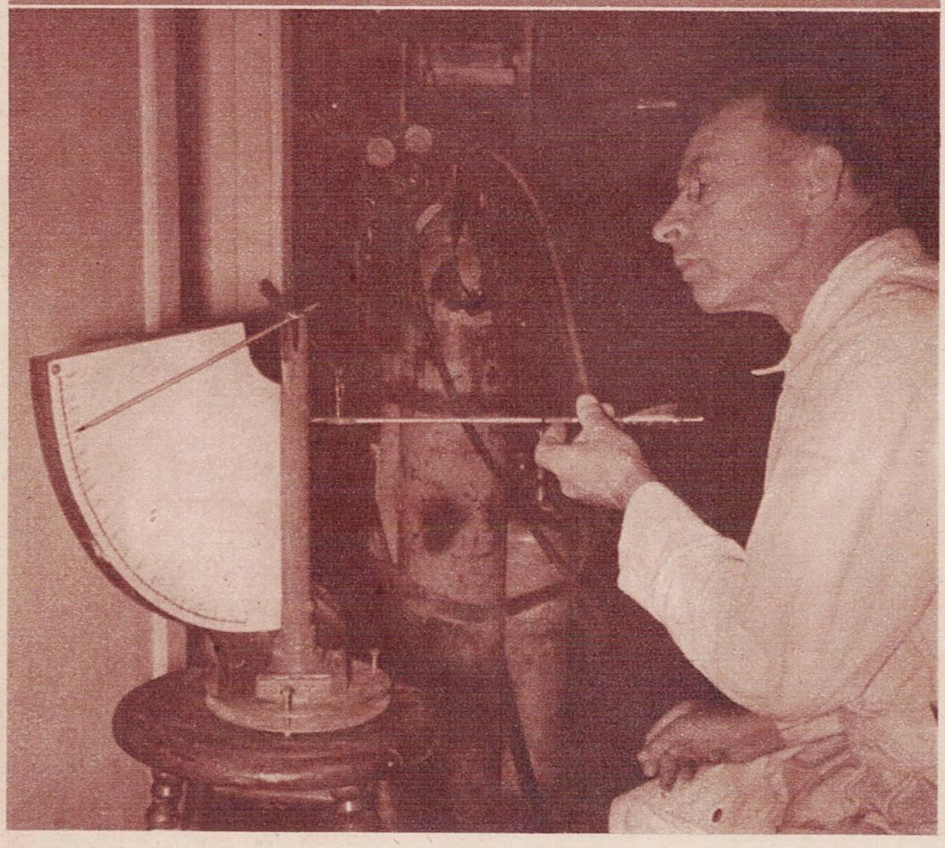
Folberth was Cleveland district archery champion for two years, Ohio state archery-golf champ for two years, and in 1936 won the international archery championship at Toronto. He lost the state archery-golf title and the international trophy to his 18-year-old son, Bill, Jr. His youngest son, Fred, became junior champion of the United States at the age of 13.

Above: Folberth with three types of bows. Left, a bow shaped by following grain of the wood; center, a conventional English long bow; and right, a mathematically-shaped bow with notched-center construction. In the picture at the left, Bill Folberth is shown using the mechanically-operated bow he uses to test arrows.

About a year ago, Bill Folberth yielded to the pressure of demands from other archers, and went into the manufacture of fine bows and arrows of his design. He also is licensed to add his center-shot feature to a scientifically - shaped bow patented by Dr. C. N. Hick-



Bill Folberth at one of his workshop lathes. Below: He checks the weight of one of his needle-nock arrows. This is an aluminum arrow with the nock (notched end) reduced to a small diameter that enables it to leave the strings and fingers with very little resistance.



man of the Bell Telephone Laboratories. In a part of the inventors' workshop area, Bill has set up his archery-equipment factory. He has five persons gluing laminations together for bows, making aluminum arrows, and so on. The arrows are sold in sets of 12, and before they are shipped they must be able to group themselves in a circle about 4 in. in diameter, at 35 yards.

For testing arrows, Folberth rigged up a mechanical bow. It looks like an old-fashioned crossbow attached vertically to a wall. It is aimed at a target 35 yards away. If an arrow shot by this bow does not group with the others, it is either straightened, otherwise repaired, or replaced with a new one.

Folberth is satisfied if his manufacturing activities break even as to profit—make enough money to pay the employees and maybe leave a few dollars for expense money at archery meets. In between times, he works on new inventions. His brother, Fred, who is not so energetically interested in the archery business, handles other development work.

Around the beginning of the century, the Folberth brothers were working in the Stearns automobile factory, which made twelve cars a year. At one time Bill was

trouble-shooter for Oldsmobile. So it was natural that, when the brothers discovered they had inventive ability, they should turn their attention to the automobile field. Their first successful invention was a carburetor, which they sold for several thousand dollars. With the money they erected a building in which to carry on their experimental work.

In the years that followed, invention after invention emerged from their workshop, and most of them were profitable. Among those inventions were a three-speed planetary transmission, an apparatus for administering ether to hospital patients, a power-driven tire pump, a vacuum-operated windshield wiper, an audible signal to let motorists know they had only three miles more driving in their gas tanks, an automobile clutch to do away with gear shifting, and a host of other items such as a spreader for shaving cream—and of course the archery developments made by Bill Folberth.

The "center-shot" bow invented by William Folberth, showing the notched construction and the adjustable sight.

The ether-administering device, which worked on the principle of a carburetor, brought no profit because it was donated to surgical science by the inventors. They sold their tire pump to a tire-manufacturing company. But it was the windshield wiper that brought real success to the brother inventors. That invention represented the first successful attempt to tap the surplus energy created by the suction action of automobile pistons. The car you drive probably has a descendent of the original Folberth vacuum wiper on it. In all, Fred and Bill took out 106 patents on their windshield wiper alone.

They were manufacturing 5,000 complete wipers a day when along came an automobile manufacturing company and offered them a huge sum for their patents, labor-saving machinery, buildings, trade marks, good will, and all. The actual amount they received is considered to run into the millions. After they sold out, they put this fortune into a joint bank account and other joint investments, erected a workshop and laboratory building, and have been enjoying life ever since . . . working day and night on new inventions! Today the brothers specialize in different fields, work independently on some problems, yet continue to pool their resources and profits.

Bill Folberth agrees with others that invention is about 98 percent perspiration and

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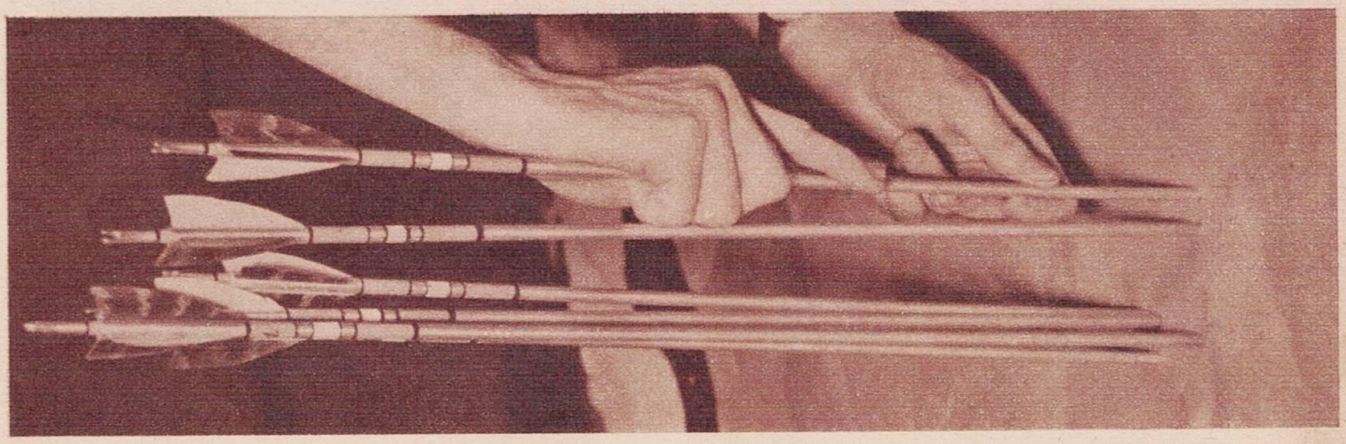
Typical grouping of six matched arrows fired by the special testing bow shown on page 77.



Inventor Takes Up Archery!

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two percent inspiration; but adds that, without the inspiration, the perspiration will not mean much. He believes that he and his brother were unusually lucky to reap a fortune from their inventing, and that today the individual inventor may not find such success so easy, because he is up against stiff competition from organized research laboratories. He says that the proposal, made not long ago, to limit the life of a patent to three years instead of the present 17 would have been disastrous for American invention and inventors if it had been enacted into law.

Although Fred and Bill Folberth have attained the success that most inventors desire, they do not like money, and consider it as being only a means to help them to be of greater service to mankind.

And so, if you have wondered what you would do with the fortune you expect to make from a pet invention, you can look at the Folberth brothers. If you are, say, like Bill, you would pursue a hobby for relaxation, and work day and night at it and at inventing still more things . . . inventing because you could not help it. Bill Folberth's family sees very little of him. He goes to his workshop in the morning, dashing home for lunch, goes back to his bench until dinner time, returns again to the shop at about 7:30, and works until nearly 11:00. He gets home in time to hear the late news broadcast, then drops to sleep. That's the typical day of an inventor who, as he says, was lucky enough to make good!

"Joe's an experienced auto mechanic—I'm sure he'll have it fixed in a jiffy!"