

Brown Jr. CO₂

By BILL HANNAN . . The legendary Brown Jr. man has done it again . . a CO₂ engine for Peanuts! Now we have to start all over again and look at each design with a new thought to its possibilities.

• *Mechanix Illustrated* magazine for February, 1943, featured a small story concerning one William Brown, at the time an instrument maker for Pennsylvania State College, with his thumb-nail size CO₂ engine. It could, according to the article, turn a 3-inch propeller as much as 10,000 r.p.m.

This was, of course, the same Bill Brown who had become famous for his Brown Jr. ignition engines during the early 1930s. Now nearly 70 years of age, Bill continues his creative ways with the introduction of another miniature CO₂ engine designed specifically for Peanut Scale models. Measuring less than an inch in height and weighing under a 1/4 ounce, the engine promises to add another laurel to the Brown Jr. legend.

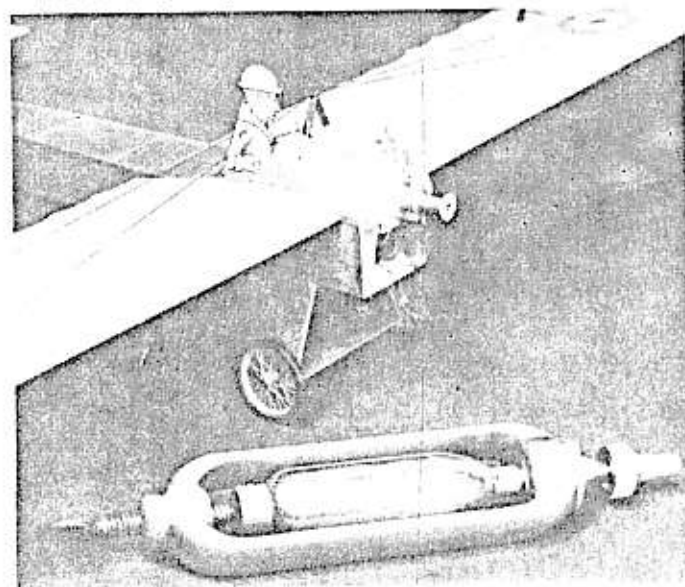
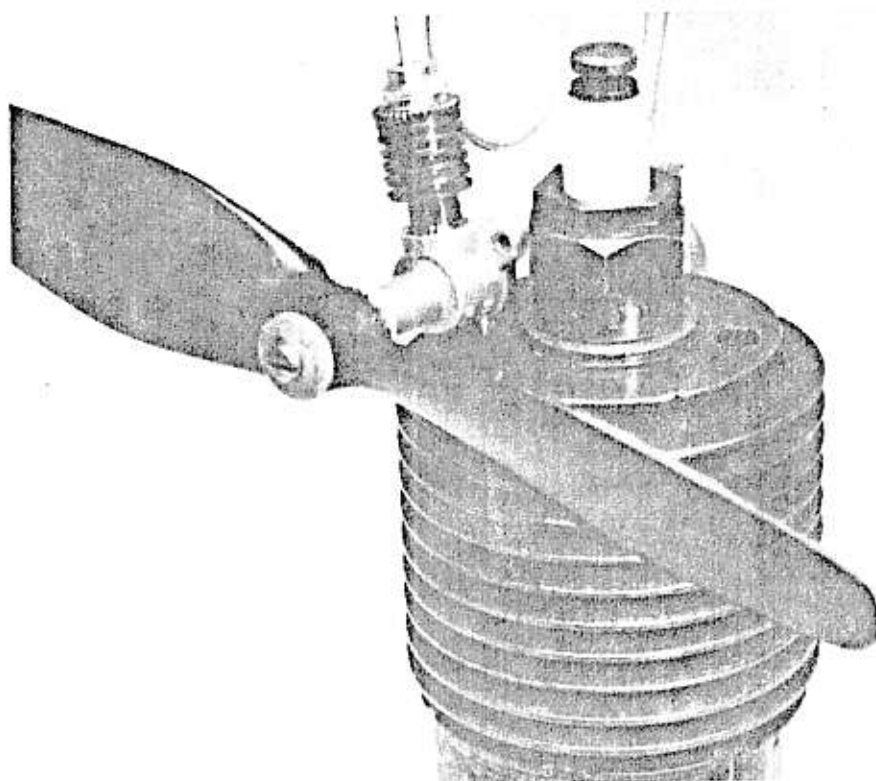
About 1948, Bill produced the Cam-

pus A-100, a tiny (1/8-inch bore and stroke) CO₂ engine. Although it created some interest among free flight scale model builders, it did not really catch on in any big way. In those days, flying sites were freely available, fuel was cheap, "noise pollution" was not yet invented, and there simply seemed no particular requirement for sub-miniature powerplants. Then too, the A-100 had a few drawbacks. Its refueling system was inconvenient and its crankshaft bearing was prone to rapid wear, especially since the lubrication instructions were frequently ignored by modelers more familiar with "gas" engines. And so, the delightful little engines quietly disappeared, becoming prized collector's items for those who appreciated such things.

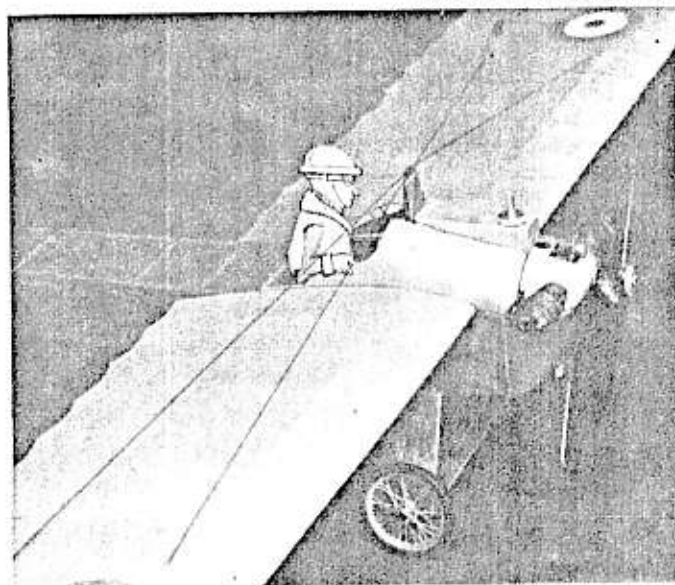
Some 30 years later, the scenario has changed. Flying sites are scarce, the cost of automobile fuel makes one think twice about driving long distances to fly models, and the public has become hyper-sensitive to noise. Electric power and CO₂ are an accepted part of the modelling scene, not only for free flight, but to a lesser extent, R/C and control-line.

And, Bill Brown has been steadily improving his products culminating in the introduction of the brand-new Campus A-23. We were privileged to receive serial #6 from the production line and have had the opportunity of giving it some preliminary testing. Comparison with the old Campus A-100 reveals the following external changes:

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Now you see it: Brown A-23 mounted in author's Farman (what else? wcn) Moto-Aviette Peanut. CO₂ loader in foreground.



Now you don't: CO₂ engine totally concealed by cowling and dummy cylinders. Only vertical filler valve offers clue to motive power.

Jodel D-9, Sopwith Tabloid, Druine Turbulent, Douglas Dauntless, North American OV-10 Bronco and many more. A stamped, pre-addressed envelope will bring you the complete list.

OWLS HEAD MUSEUM

Visitors to Maine may wish to investigate the Owls Head Transportation Museum, which incorporates a fine collection of antique autos, engines and aircraft. Some of the more significant flying machines displayed (and sometimes flown) are a 1909 Bleriot, 1911 Wright Flyer, 1912 Curtiss Pusher, WW-I Fokker triplane, Spad, Nieuport 28, 1918 Hisso Standard, and Ford trimotor. And, if your tastes include earth-bound machinery, you might appreciate the 100-ton Corliss steam engine, the single-cylinder Oldsmobile, or the Stanley Steamer. Membership and admission information may be obtained from P.O. Box 277, Owls Head, Maine 04854.

1934 AGAIN

Frank Zaic has just republished his famous 1934 Junior Aeronautics Year Book. This treasure trove would be well worth buying for its timeless information, constructive articles, hints, tips, and model 3-view drawings. However, Frank has made it even more valuable by the inclusion of additional material, such as reprints of several pre-war JASCO model supply catalogues.

Sprinkled throughout are gems of wisdom and even nuggets of the Zaic brand of humor such as this: "JASCO indoor balsa is cultivated in a special hydrogen filled armory." Thumbing through the illustrated price lists is enough to make anyone yearn for a time-machine. How about a Brown Jr. Model "D" ignition engine for \$12.50 postpaid? Or perhaps an Ohlsson 19 at \$14.50? And Champion spark plugs to fit them for only 65 cents each!

And you rubber-power fans... how do these good-old-days prices strike you? Silver Japanese tissue, 20x24-inch sheet, at a nickle a throw. Contest rubber, depending upon size, was available back then at prices ranging from 25 to 60 cents per 225 foot skein! But returning to the present days, this book is surely a bargain at only \$5.50 postpaid from: Model Aeronautic Publications, Box 135, Northridge, CA 91324.

SIGN OFF

Richard Miller passed along this sign seen in the Lone Eagle Saloon, Minneapolis-St. Paul Airport:

"LONE EAGLE LAW"

Before you fly make sure you're on board.

Brown CO₂ . . . Continued from page 54

The crankcase has been completely redesigned with longevity and ruggedness in mind. The crankshaft now features internal threads to accept a machine screw, rather than the former external-thread-and-nut arrangement to secure the propeller. The cylinder has more closely-spaced fins, an aluminum head, and fuel lines. The filling valve is similar to current larger Brown CO₂

engines, except that it features an aluminum rather than brass base in the interest of saving weight.

Our engine arrived equipped with a standard 3cc capacity "fuel" tank as employed on larger Brown engines. However, after a few test runs produced well over two minutes' duration, we substituted an optional 2cc tank. This "jelly bean" size unit would seem entirely adequate for most outdoor free flight useages, weighs less, and takes up less space. Other optional tanks are available, including 6cc, 10cc, and 20cc. These should be ideal for indoor duration or multi-engine free flight use. Indoor control-line would seem entirely practical, as would indoor R/C, if only Bill Cannon or Hank Fazola (VL) would get going on TRULY small guidance systems!

Bill Brown himself has been test-flying the new A-23 in a Peck-Polymers kit Piper clipped-wing Cub Peanut inside a gymnasium, and reports excellent results as well as the ability to withstand occasional shocks from bouncing off the walls! Peanuts have been flown with "regular" size Brown CO₂ engines, but were generally a tight fit and a bit on the heavy side for the application. By contrast, the new unit will fit easily in almost any Peanut, and doubtless would fly much larger models if they were constructed lightly.

Since we were eager to try out the A-23, we converted an existing Peanut, the Farman Moto-Aviette. This particular model had not been an impressive performer under rubber power because of its draggy configuration and short nose, which required excessive ballast weight. Installation of the CO₂ engine and tank permitted the model to balance without recourse to ballast, and it was possible to totally enclose the unit with the exception of the filler valve. This too could have been better concealed with extra effort. Our approach was hasty and direct (crude?) but practical. A small firewall for the engine and mounting disc for the filler valve were cut from plywood, and the entire front end of the model was "beefed-up" with scraps of balsa and plywood. The powerplant itself does not place any undue stresses upon the airframe, but the loading operation may, since a surprising amount of pressure is required to properly engage the filling nozzle with the CO₂ charging tool. Probably a much neater arrangement than ours could be worked out by "designing in" the installation prior to constructing the model.

The use of a CO₂ engine in a Peanut also makes possible employment of a scale size prop. The plastic one furnished with the Brown measures 3-1/2 inches in diameter, but slightly smaller or larger ones may be employed. This should eliminate the need to stretch landing gears even on "short-legged" subjects. Cockpit interior details are also feasible without the rubber motor running through the center of the fuselage.

Under present contest rules, CO₂ power is recognized as eligible for the



free flight "gas" scale class, and models so powered have placed within the top three spots at several Nationals contests. Who will be the first to win with a Peanut?

A phone call to Walt Mooney disclosed his intention to design "at least six new Peanuts" especially for the A-23. But meanwhile there is no shortage of choices. In addition to kits on the markets, R/C MB has presented over one hundred suitable plans. Brown Jr. is cranking out the engines as rapidly as possible, but as with any desirable new product, the demand may exceed the supply. Orders are being filled on a first-come first-served basis either directly from the factory or from Peck-Polymers and other authorized dealers. At \$39.95, we consider them a bargain and well worth any wait!

Indoor Continued from page 57

ster).

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