

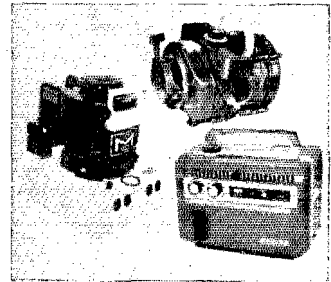
# Recent Equipment



To acquaint you with the technical features of current amateur gear.

## Lightweight Portable

### A.C. Generators



VETERANS of ARRL Field Day expeditions tend to think of a "portable generator" as a roaring gas-guzzling behemoth capable of supplying power for anything up to a dozen ham stations running simultaneously. Even the smaller a.c. generators commonly used for amateur radio purposes have continuous-duty ratings of 1000 watts or more. But of late people accustomed to the convenience of city a.c. power have been taking to the wide-open spaces in ever greater numbers, and these travelers and campers constitute a ready market for compact and convenient generators. Many manufacturers are aiming for this market, and hams who like to "work portable" with equipment of moderate power are benefiting from the trend.

The first two portable generators described

here won't do much for a multiple-station Field Day setup, but the low-power enthusiast who likes to take his ham gear wherever he travels will find them useful. They require only a small amount of fuel, and they pack away in a modest space in the family car or camping vehicle. Even generators rated at 300 watts, maximum, continuous duty, provide plenty of power for most sideband transceivers and v.h.f. rigs now so widely used in home-station and mobile service. Some also generate 12 volts d.c., that can be used to recharge the car battery, in case it is run down by over-use of the mobile gear. The 2000-watt model will run any ham rig you're likely to want to carry with you, and it packs enough power to serve as an emergency system for home use, as well.

## The Honda E-300

Here is a generator designed especially for the traveler, with attention paid to form factor, low center of gravity, safety and freedom from gas-leakage problems. Weighing but 40 pounds, ready to run, it delivers 300 watts a.c. or 12 to 13 volts d.c. at up to 8 amperes. It is completely enclosed in a handsome red and silver case, with rounded corners and a husky carrying handle. It carries like a piece of luggage, and can be stowed in a car's luggage compartment almost as readily and safely. With its gas supply shut off it is guaranteed not to leak, even when turned on its side.

Operation is simple and foolproof. Knob controls seen at the left side of the unit in the group photo and in Fig. 1 are for the combined throttle and choke, left, and the gasoline cock. The choke-throttle pulls out for choke action, and is rotated for speed control. There are two detent positions

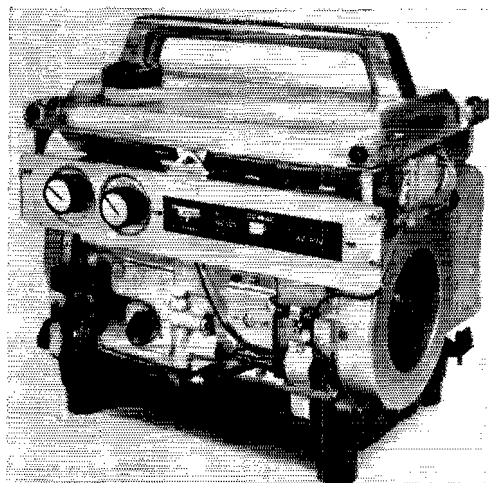


Fig. 1—Front view of the Honda generator, with case removed. Oil sump cap is just to the right of the starting rope handle.

Fig. 2—Rear of the generator. Wrench for removing spark plug is mounted in clips under the cover edge.

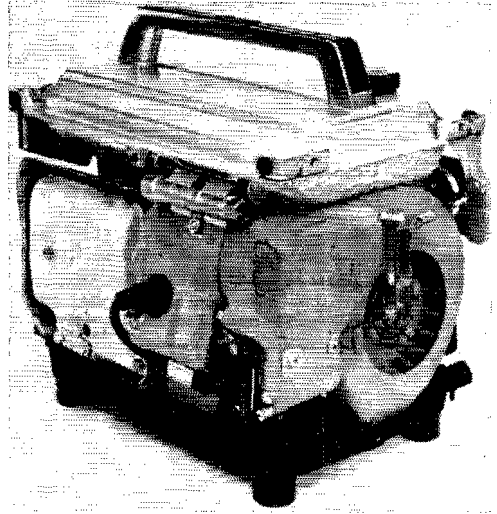
for setting the choke for starting and warmup, and it is pushed all the way in for running. The gas cock is "off" at the left and "on" at the right. The starting rope and handle are below the choke control. In the center of the recessed panel is a frequency meter. The throttle is adjusted to keep the frequency at 60 cycles, regardless of load, and when this is done the voltage is close to 115, kept so by an automatic speed governor. The generator is supplied with a spare spark plug, fuses, and a clip-equipped cable for use in charging a battery with the 12-volt output.

The generator supplies either a.c. or d.c., at the flip of the slide switch visible as the white button in the black panel. At its left is a polarized 12-volt outlet, and to the right a slot-type a.c. outlet capable of taking up to three plugs at one time. A frequency meter shows when proper speed is being maintained under load. The generator cannot be damaged by overloading. With loads such as heaters, where operating voltage and frequency are not important, a 500-watt unit could be connected without any problems except that the heater will not deliver full output. A 500-watt transmitter is another story; it could suffer from low line voltage or frequency. Therefore, overloading the generator with a transmitter or receiver is not recommended.

The Honda 4-cycle engine runs more quietly and with less vibration than most such devices. The assembly sits calmly on its rubber feet, and does not "walk around" while in service. Connected at the other end of a 50-foot extension cord it does not interfere with ordinary conversation, and it is unlikely to be heard on the air via microphone pickup. A separation of 100 feet or more is necessary with the average generator, and even then an operator in the open may hear considerable racket.

Some electrical interference is evident, however. The writer operated portable gear on 50, 144 and 1215 Mc. using the Honda for power. On the two lower bands there was some ignition noise. This was radiated; line filters did not help, and noise pickup depended on the position of the v.h.f. beam. It was never serious, and was not noticeable with the receiver limiter on. American Honda confirms the presence of some electrical noise, and ascribes it to the wave shape of the generator output. They state that the loaded output of the E-300 is not a pure sine wave, but rather has two steep edges per cycle, introduced by the voltage control reactor. They recommend filtering at the equipment, should this be necessary, rather than at the generator. Our guess is that, in typical amateur radio applications, it will not be a problem of consequence.

There was also a buzzing sound in the receivers for 6 and 2, apparently the result of the spiky waveform of the a.c. power. Some 50-Mc. operators reported hearing the buzz on the transmitted signal, but on 144 it was observed only



in receiving. It was not radiated from the generator; operation of the receiver on a commercial a.c. source, with the Honda running nearby, eliminated the buzz in the receiver. In working on 1215 Mc. with an APX-6 there was no noise in either transmitter or receiver. Neither type of noise was particularly troublesome, and the convenience of the Honda E-300 made it a delight for hilltop v.h.f. work. It runs for several hours on a quart of gas, and its leak-proof cap and gasoline line shut-off make it safe to carry with gas in the tank, ready for use.

Honda also makes the smallest a.c. generator we've ever seen, a 48-watt model that is about the size and shape of the famous Heath Twoer and Sixer. It has just about enough power to handle one of these "lunch-boxes," but it is unlikely that it would do for much else in the way of ham gear. At under \$100, it might be worth the price just to make a light or two, and to run your regular home razor or toothbrush, if not your ham rig.

### The Honda E-300 A.C. D.C. Generator

Height: 12 inches, including handle.

Width: 13 inches.

Depth: 9 inches.

Weight: 39 pounds.

Fuel: Regular or high-octane gasoline, lead-free preferred.

Lubricant: SAE 10W, 20, 20W or 30, depending on temperature.

Output: 300 watts, 115 volts, a.c., or 12 to 13 volts d.c., at 8 amperes.

Generator type: Flywheel-magneto.

Price Class: \$180.

Manufacturer: Honda Motor Co., Tokyo, Japan.

U.S.: American Honda, 100 West Alondra Blvd., Gardena, Calif. Also Gould Enterprises, Inc. 811 Lynnway, Lynn, Mass. 01905, and other agents in larger cities.

## The Zeus ZS500 Sportline

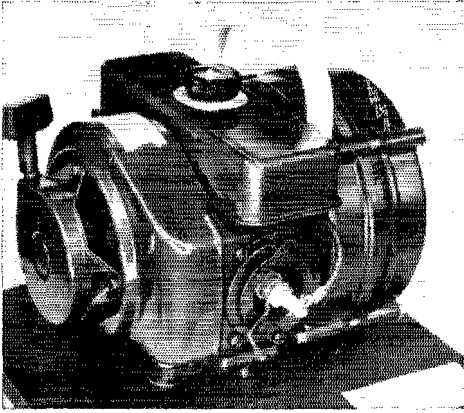


Fig. 4—The Zeus Sportline 500 Generator. Ignition is cut off to stop the engine by moving a small lever that shorts the spark plug terminal to ground. The plywood shipping base may be removed or left on the unit in use.

A somewhat heavier-duty generator of very different design is the Zeus 500-watt Sportline model shown in Fig. 4. Simplicity and rugged construction are featured in this 2-cycle engine job, equipped with a 500-watt alternator which has only one moving part. In shape, appearance and operating characteristics it is less a departure from conventional design than the Honda model described above. It "looks like a portable generator," and sounds like one, as well. The generator shown is the smallest of a family of models that also includes 1000, 1250, 1500, 2000 and 3000-watt units.

The Tecumseh 2-cycle engine in the ZS500 runs on a mixture of SAE-30 grade motor oil and regular gasoline, and requires no other fuel or lubrication. Like other 2-cycle engines it is very

simple, and presumably trouble-free as well. The alternator is also mechanically simple in design. As may be seen from the photograph, the Zeus is shipped mounted on a plywood base. It can be used this way, if desired.

The ZS500 has the typical snarl of a 2-cycle engine, but the power it generates is clean and noise-free. Using it to power a phone rig operating out in the open calls for a good long extension cord, but it presents no electrical interference problems. From our observations, the 500-watt rating is a conservative one, and the Zeus handles this load with ease.

Operation is similar to any portable gas-engine device. The choke and throttle levers are conveniently located on the opposite side of the unit from that in the picture. The choke has three detent-marked positions, for starting, warmup and running. The throttle is continuously adjustable and is normally operated about three-quarters open, for near-maximum loads. The gas tank cap has a built-in fuel supply indicator.

### **Zeus ZS500 Sportline Generator**

**Height: 12 inches, including handle.**

**Width: 13 inches.**

**Depth: 13 inches.**

**Weight: 40 pounds.**

**Fuel: Regular gasoline, with oil mixed.**

**Lubricant: SAE-30, mixed with gas.**

**Price Class: \$135**

**Manufacturer: Zeus Portable Generator**

**Co. 12435 Euclid Ave., Cleveland, Ohio 44106.**

## The McCulloch MITE-E-Lite, Mark 2

WHEN you've boosted this generator into the back of your station wagon you may question our classification of it as "lightweight," but the fact remains that on a watts-per-pound basis the MITE-E-LITE family does qualify. Others in the series are the Mark 1 (1500 watts, 61 pounds) the Mark 5-20 (2000 watts, 76 pounds) and the Mark 3 (3000 watts, 129 pounds), as well as the Mark II, the model to be described. The latter two large models deliver either 115 or 230 volts, a.c. Generators delivering 230 volts are available for all units, as are propane conversions.

These generators are all equipped with Briggs and Stratton 4-cycle engines, the Mark 2 having

a 4-h.p. version. The strengths and weaknesses of these power sources will be well-known to users of power lawnmowers, tractors and all the other noisy fixtures of American Suburbia. You can count on your instruction book having been written about some slightly different model from the one used on your particular device, and therefore you'll never quite understand what to do when something goes wrong, but the chances are good that there is someone in town who will be able to bail you out. Qualified B & S servicemen are almost everywhere, but they are not needed too often as a rule.

The principal element of novelty in the MITE-

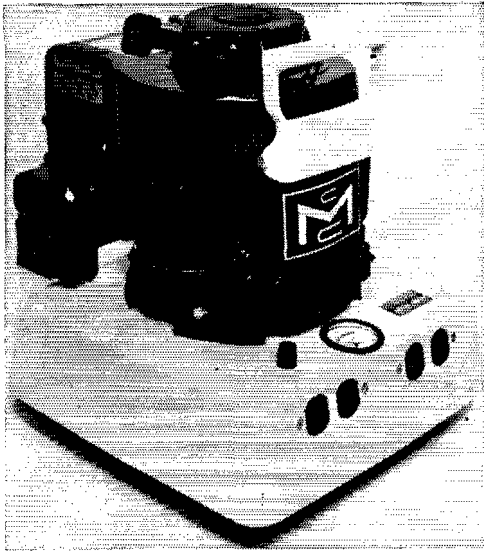


Fig. 5—The MITE-E-LITE Mark 2 2000-watt generator. Four a.c. outlets are mounted in the cast-aluminum base. Just above them is the a.c. voltage meter. Vertical mounting of the engine and flat pancake design of the alternator conserve space.

E-LITE models is the vertical mounting of the simple and compact generator unit. As with the Zeus, its flat coils are fixed in position, with permanent magnets rotating adjacent to them. There are no brushes or slip rings, and the common problems associated with these devices are eliminated. Extensive use of aluminum in place of cast iron and the vertical design of the equipment make for relatively light weight and economical use of carrying space. Note that the Mark 2 provides 2000 watts capacity, in 2½ cubic feet of space, yet it weighs in at 72 pounds, fueled.

Probably nobody in America needs to be told what a Briggs and Stratton engine sounds like. This one is like the engine in your snow blower in this respect — but if the noise is keeping your refrigerator, oil burner and TV set going when

the power lines are down the racket may have a rather comforting quality. If you like to go portable “loaded for bear” this generator has what it takes to put out a big signal from your favorite mountain top or hunting lodge.

Electrically, the MITE-E-LITE is quiet. Locate it on the far side of a high stone wall, or a thick hedge, and you can run your ham rig in peace, with power about as clean as that coming over your commercial lines. — *W1HDQ*

### MITE-E-LITE Mark 2 Generator

Height: 17½ inches.

Width: 11 inches.

Depth: 15 inches.

Weight: 71 pounds.

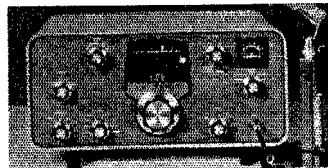
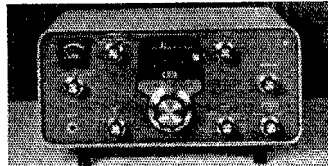
Fuel: Regular gasoline.

Lubricant: SAE 30, 10W-30 or 5W-20, depending on temperature.

Price Class: \$320

Manufacturer: McCulloch — MITE-E-LITE, Inc., Wellsville, N. Y. 14895

### Next Month



Heathkit SB-401, SB-301

## NEW BOOKS

**Solid-State Communications**, by the Engineering Staff of Texas Instruments Incorporated. Published by McGraw-Hill Book Company, 330 West 42nd St., New York, N. Y. 10036. 365 pages, including index, well illustrated with many drawings, cloth cover. Price, \$12.50.

From the title, one might expect *Solid-State Communications* to be a conventionally laid-out text book, but it is not. Rather, it is a collection of more-or-less independent technical papers, dealing with a common subject but varying widely in the method of treatment. Some are thoroughly practical in orientation, not at all over the heads of amateurs with a technical interest but without formal education in the field. Others will appeal only to the professional. Throughout, however, the accent is on applications of actual semiconductor devices manufactured by Texas Instruments, including the latest developments.

The book is divided into twenty-two chapters ranging in subject matter from a discussion of temperature/parameter relationships to measuring procedures. There is much material on noise, a very readable discussion of the principles and characteristics of field-effect transistors, sections on the design on v.h.f. and u.h.f. amplifiers and oscillators, and a considerable number of practical circuits, some of them in or close to amateur bands.

The reader cannot educate himself in transistor communication by starting at page 1 and working continuously throughout the book, but he can glean much useful information from its pages, providing he knows something about transistors beforehand. Although the complete communications field is not covered — there is nothing about modulation, for example — the treatment of those subjects that are included is specific and can be usefully applied to actual equipment, a topic on which formal texts often leave much unsaid. — *W1DF*