center electrode was negative. This cannot be done by simply reversing the high voltage leads if one side is to be grounded. However, it can be accomplished by reversing the plate and filament connections to the high voltage rectifier so that the current passes through the circuit in the opposite direction, thereby reversing polarity. Further details concerning this change, as well as detailed information on the construction of the power supply can be obtained from us.

All the necessary parts, except perhaps the coil, are readily available through local radio supply houses. The cost of the parts was approximately $35. The complete power supply can be assembled in the average laboratory in about two days and at a cost considerably less than the PS-10 or newer types of television high voltage power packs.

TABLE 1.—*Comparison of Material Collected by Electrostatic Precipitator*

Test	Material Used *	Operating Voltage, Kv.	Sampling Rate, Cu. Ft. per Min.	Sampling Time, Min.	Volume of Air Sampled, Cu. Ft.	Weight of Fume Collected, Mg., with Indicated Instrument and Polarity of Center Electrode			
						PHS-50 Pos.	PS-10 Neg.	Old M. S. A. Neg.	New M. S. A. Neg.
1	Lead oxide	13.5	3	14	42	21.5	22.6	....	....
2	Lead oxide	12.0	3	13	39	500.2	456.5	....	....
3	Lead oxide	12.0	3	30	90	101.1	103.8	....	....
4	Lead oxide	12.2	3	25	75	3.1	3.4	....	....
5	Lead oxide	12.4	3	37	111	10.4	8.3	....	....
6	Lead oxide	12.4	3	15	45	62.9	50.7	....	....
7	Lead oxide	11.4	3	40	120	21.2	19.2	....	....
8	Lead oxide	12.2	3	30	90	32.2	28.9	....	....
9	Lead oxide	11.5	3	30	90	12.2	12.2	....	....
Totals		....	..	234	702	764.8	705.6	....	....
10	Zinc oxide	11.8	3	30	90	16.0	11.8	....	....
11	Zinc oxide	13.5	3	25	75	8.1	8.2	....	....
12	Zinc oxide	13.3	3	35	105	4.8	5.8	....	....
13	Zinc oxide	13.2	3	35	105	9.3	7.8	....	....
14	Zinc oxide	13.4	3	35	105	22.6	18.8	....	....
Totals		....	..	160	480	60.8	52.4	....	....
15	Lead oxide	13.5	2.56	60	153.6	30.2	34.5	31.6	31.0
16	Lead oxide	13.5	2.56	35	89.6	64.4	59.2	56.5	58.6
17	Lead oxide	13.5	2.56	45	115.2	67.3	67.4	67.0	64.8
18	Lead oxide	13.5	2.56	30	76.8	11.7	12.1	12.0	12.4
19	Lead oxide	13.5	2.56	35	89.6	30.7	32.8	33.1	32.3
20	Lead oxide	13.6	2.56	50	128.0	64.4	63.2	54.8	60.1
21	Lead oxide	13.6	2.56	46	117.8	53.3	55.4	48.6	52.5
22	Lead oxide	12.5	2.56	30	76.8	25.9	26.4	25.3	27.3
23	Lead oxide	12.5	2.56	35	89.6	43.0	44.3	44.8	46.5
24	Lead oxide	12.5	2.56	15	38.4	26.4	30.1	26.5	29.8
25	Lead oxide	12.5	2.56	15	38.4	19.4	20.5	20.9	19.6
26	Lead oxide	12.5	2.56	35	89.6	15.4	15.5	14.0	15.2
27	Lead oxide	13.0	2.56	30	76.8	31.2	30.6	30.0	30.3
28	Lead oxide	13.0	2.56	10	25.6	28.3	29.1	31.5	27.7
Totals		....	....	471	1,205.8	511.6	521.1	496.6	508.1

* Freshly formed lead and zinc oxides were prepared by means of a carbon arc inside the fume chamber.

NEW POWER SUPPLY COMPARED WITH OTHER INSTRUMENTS

The efficiency of the PHS-50 power supply for the collection of lead and zinc oxide fume was compared with that of three other instruments. These were (1) the PS-10 modification, (2) the old M. S. A. and (3) the new M. S. A. electrostatic dust and fume sampler. These tests were conducted using a fume chamber which was approximately a 6 ft. (1.8 M.) cube. The four instruments were set up as shown in figure 4 and were operated simultaneously for the periods indicated. To minimize the effects of variation in the distribution of material inside the chamber, the positions of the precipitators were changed after each test. The air flow and the voltage were adjusted to the same value for each instrument before every test and checked at the conclusion of the test. The results of these tests are shown in table 1.