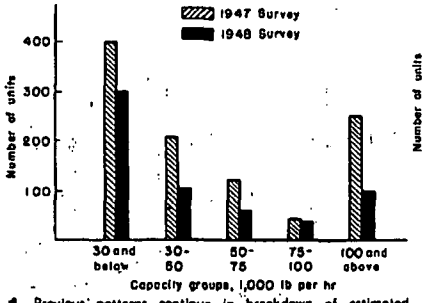
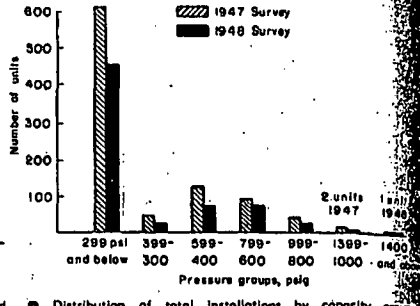


1 Previous patterns continue in breakdown of estimated total installations in the various pressure classifications



2 Distribution of total installations by capacity groups shows the larger units dominate in terms of steam capacity

Industrial Power Activity Emphasizes Steam-Making

General industry continues the largest single user of firing and steam-generating equipment. Here's what is being done currently on pressures, unit capacities, firing methods, based on a comprehensive survey by POWER

► TABULATIONS on pp 116-122, drawn up from POWER's current survey of steam-power installations, give technical data on approximately 350 plants serving industrial establishments, institutions and governmental agencies, roughly half of estimated equipment sales. Although American industry generates only a little more than one-quarter of the electric energy it consumes, the fuel-burning and steam-generating equipment installed to meet heating and process needs in this field *undoubtedly aggregates* more than that in central-station service. In this respect particularly, then, the industrial field represents a major sector of the total.

For example, the pulp and paper industry ranks next to the utilities as the largest single purchaser of boiler units, in terms of numbers. Reflecting the larger average size of its units, the chemical industry, including the oil refineries, ranks next to the utilities in terms of capacity. Right behind in both classifications comes the steel industry.

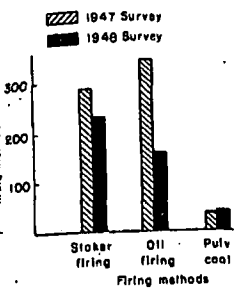
Overshadowing each of these individual sectors of the economy, as far as over-all totals go, is the new steam-generating equipment put into general industry—food, rubber, textiles, metal-working, etc, as well as the various institutions and agencies.

Construction Activity. While construction of power facilities in the industrial field has been, and is, at a relatively high level, it has not been characterized by the record-breaking pace of the utility field. *Authorities advance a number* of reasons for this difference. During the war years, growth in essential industrial power requirements was met partly by construction of new plants, particularly in certain industries, and partly by a directed shift to central-station power. By and large, industry came out of the war without any great backlog of unfilled power demand.

In contrast, nonessential utility loads were rigorously curtailed during the war years, and this pentup demand, abetted by population growth, left them with a tremendous capacity deficit to be made up as fast as possible. Today, we are still involved in the "catching up" process, complicated, of course, by continued rapid load growth.

Starting with a power situation reasonably in balance, industrial power construction comes from (1) extension of production facilities as distinguished from higher operating rates on existing facilities, and (2) replacement of existing power facilities for more economical operation. The first factor is *undoubtedly responsible for many* of the new installations in the industrial and institutional fields, but modernization has tended to lag. In the light of the postwar situation—rapidly rising costs, unsettled business conditions, continued reconversion problems—many managements have been understandably reluctant to embark on extensive modernization programs. They have displayed a tendency to postpone such steps entirely, or to take only those that are immediately necessary and *clearly justified.*

Steam-Generation Trends. Figs. 1 and 2 above indicate some general characteristics of the steam-generation equipment that constitutes the major part of industry's power-plant construction activity. How estimated total sales for comparable periods covered by the 1947 and 1948 surveys break down by pressure groups and capacities is shown in Fig. 1 and 2. As might be expected, when the comparison is made in terms of number of units, the small sizes and low pressures clearly dominate the field. It should be noted that the Power survey is confined to "power" boilers (100 psi and above) and thus does not include the numerically large heating boiler field. In the capacity groups, the number of units of 50,000 lb per hr and over is distinctly impressive when coupled with the larger unit size, giving dominance to the large units.



1 For all units reporting method of firing, distribution is as shown

total steaming capacity is considered. In considering the pressure classification, remember that selection of operating pressure depends on different considerations in the industrial and utility fields. It may be reasonably assumed that the large number in the 299-psi-and-below range represents units installed primarily for process and heating loads. Where power generation is involved, of course, ratio between steam and electrical loads largely determines operating pressure. The relatively large number of units in the 400-to-799-psi range may give some weight to the thoughts that a number of authorities have put forward regarding the relatively greater increase in *industrial electrical loads as compared to* process-heat demands.

Fuel-Burning Equipment. Fig. 3 and the table below give a quick comparison as to trends in firing methods. Fig. 3 compares 1947 and 1948 figures for installations on which data as to firing method were available. In the 1947 figures, covering 611 plants out of a known total of about 970, oil accounted for 51.6%, stokers 43.4%, and pulverized-coal 5.0%. The current data, representing 433 out of about 630 installations, show stokers *up to 53.2%* and pulverized-coal up to 8.9%, with oil-firing off to 37.9%. While this may reflect the short-range tightness of fuel-oil supply, too much weight should not be given to the change in view of lack of complete data.

The table assembles, for both current and previous surveys, number of units employing stoker, oil or pulverized-coal firing, as well as the many other installations either not reporting or built for special fuels. These data are subdivided by pressure and capacity. As might be expected, stokers and oil firing dominate in the smaller plants and in those operating at low and moderate pressures. As pressure and size of steam generator increase, pulverized-coal firing becomes relatively more important.

It is of interest to note that last year one industrial plant reported an installation of a steam-generator equipped with a cyclone burner. The same company reports, this year, two additional cyclone units planned for late 1949 operation. All three units have pressurized furnaces.

Other Trends. Although not specifically covered in the survey, there is evidence of a trend to increasing use of dust collectors. In one form or another, mostly mechanical, their adoption by industry seems to be growing in response to current emphasis on reduction of air pollution. Likewise much more conservative heat-release figures are being reported, indicating a definite effort on the part of designers to *build into steam-generating units* the larger furnaces essential to operating flexibility where a wide range of coal characteristics must be handled now and in the future.

There is considerable evidence that industrial plants are approaching the question of feedwater treatment in a more intelligent and constructive manner. The function of water treatment is becoming more clearly understood, and proper equipment and methods are being designed into the plants, even those of modest proportions, rather than being added after trouble occurs.

Emphasis on steam-generating equipment in current industrial-power expansion and modernization programs undoubtedly reflects continued caution of management on all but essential steps, rehabilitation in the boiler house being, in general, less deferrable than in the turbine room.

TYPE OF FIRING EQUIPMENT USED WITH INDUSTRIAL BOILERS RECENTLY ORDERED

Table I—Pressure Divisions

	1947					1948			
Pressure, psi	Stoker	Oil	Pulv	Unreported or otherwise	Pressure, psi	Stoker	Oil	Pulv	Unreported or otherwise
299 and below	147	260	8	143	299 and below	187	138	6	115
300-399	7	14	1	20	300-399	1	6	4	13
400-599	31	34	10	73	400-599	34	7	17	12
600-799	6	37	24	34	600-799	4	8	21	35
800 and above	4	19	6	30	800 and above	8	5	15	0

Table II—Capacity Divisions

	1947					1948			
Capacity, M lb per hr	Stoker	Oil	Pulv	Unknown	Capacity, M lb per hr	Stoker	Oil	Pulv	Unknown
29 and below	139	130	4	133	29 and below	108	110	2	103
30- 49	58	93	4	60	30- 49	47	26	7	27
50- 79	34	30	5	55	50- 79	15	17	9	10
75-100	4	11	2	28	75-100	18	0	14	8
Above 100	24	91	21	14	Above 100	91	13	38	36