

One, with about 1,600 locomotives, reports considerable success with the Bates baffle fire door and Heffron draft regulator. Another large road has attained considerable success by using a ring blower at the top of the stack; claim is made of almost complete elimination of the smoke on the road and the prevention of smoke trailing into the cab; cost is about \$7.75; the device is shown herewith. One reports the application in the corners of the fire box of special castings from which steam and air are admitted above the fire, and stated that the apparatus was an apparent success, though no figures were submitted. Another road reported trial of this system with less degree of success than with the apparatus according to the committee's recommendations.

Only one large road has tried any special devices for handling locomotive house smoke. One other large road is about to try a device and still another has the matter under consideration. The special device referred to is the smoke washing plant of

Schmidt superheater appears to be in almost universal use, a few Cole superheaters being the only other ones reported. The fuel economy of the superheater varies from 12 to 35%. One important road reports a saving of as high as 40% in the average number of pounds of coal used per car handled in switching service.

One road reports smoke reduction by the use of a ring blower hung inside the stack in a horizontal position in firing up locomotives in the locomotive house. Another claims to have reduced smoke about 30% by leaving the jets on. Three large roads have tried different methods of firing-up, with the results that with fuel oil and shavings, atomized fuel oil, oil and engine wood, the last named produced the least smoke and was cheapest, the cost being about \$1 per locomotive. With briquettes, cost about \$1.50; soft coal, \$2.09; coke, \$4.26; briquettes gave as little smoke as coke, and yet are the cheapest of the fuels tried. Another finds that by putting coal

on the grates and wood on top that less smoke is produced, but cost figures were not given, and it is believed that this method is more injurious to the grates, especially with coal that clinkers badly. Another large road, after considerable investigation, has adopted firing-up with scrap waste, crude oil, wood and coal in quantities, waste, 1 lb.; crude oil, ½ pt.; old car siding, ½ cord; coal, 300 lbs.; the method employed is to saturate the waste with the crude oil and throw it in on the grate, after being ignited; on top of this, in small bunches, is thrown the wood, and when the wood gets burning well six to eight scoops of coal are added; then in about 30 minutes more coal is added.

From the numerous reports outlined the committee finds that the application of the apparatus recommended by them last year has proved successful in extended practice toward the elimination of smoke in steam locomotives and suggests its more general adoption.

Report of Committee on Standardization of Tinware.

The American Railway Master Mechanics' Committee, M. D. Franey, Master Mechanic, Lake Shore and Michigan Southern Ry., chairman, reported in part as follows:—

During 1911 a very complete paper on standardization of tinware was presented to the Railway Storekeepers' Association. The committee which compiled the report collected the data from practically all of the leading railways, giving the dimensions of the various tinware used in their respective departments, this to include articles manufactured from galvanized iron. Your committee has received some very valuable suggestions from the Storekeepers' Committee, though we have confined ourselves to tinware included in the locomotive department only.

We cannot hope to present dimensions that will be adopted by each of the railways. Many now have their standards; for various reasons they do not wish to depart from them. There are railways, however, that have not adopted a standard, and while the committee has studied principally the method of construction and the material to be used, it has also selected the dimensions that in its judgment will be most suitable for the service for which each article will be used. This is probably as close as we can ever expect to come to a standard on tinware. As an illustration, it is well known that a tank bucket has to withstand very severe usage. For this reason your committee is recommending a tank bucket with a bottom of very small diameter, designed with a specially formed wire guard fastening the bottom in place. The bottom of the bucket is also depressed so that it can set over a projection without injury. This form of construction will very successfully withstand the service and the force of a blow to which the tank bucket is subjected.

Your committee has endeavored to reduce the number of articles used to a minimum, and it finds that a number of roads get along with the articles mentioned in this report. It has not included headlights, cab lamps, lanterns or markers, as it finds most roads purchase these articles from manufacturers. Very few railways have detailed drawings of these articles, or manufacture themselves. It might be of interest to review some of the commercial terms applied to the tin used in construction. The plates are referred to as coke tin, charcoal tin andterne plates.

COKE TIN PLATES.—The base of these plates is the best soft steel, made especially for tin plating. The word "coke" is a trade

term, indicating finish, retained from the time when high grade tin plates were made from charcoal iron and lower grades from coke iron; hence, plates with lighter coating are called coke tin plates. Tin plates are generally packed in boxes, and the unit of value and measurement is known as a base box, which is 112 sheets of 14 by 20 ins., or 31,360 sq. ins. of any size.

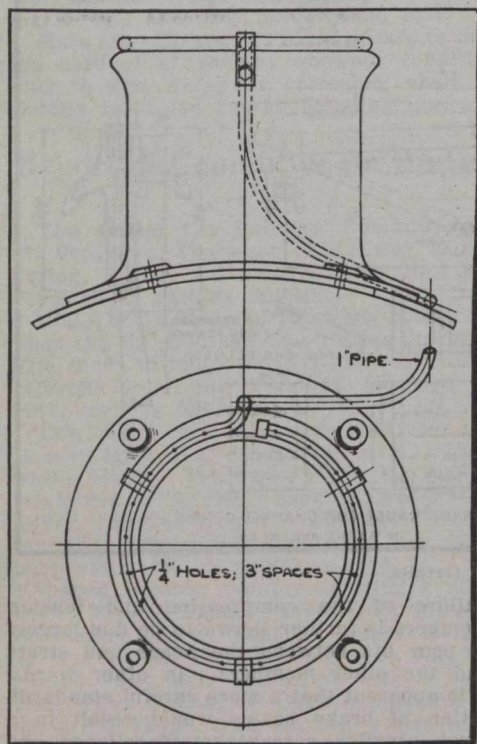
No.	Lbs.	No.	Lbs.
38	55	31	90
37	60	31	95
36	65	30 1/2	100
35	70	30 IC	107
34	75	29	118
33	80	28 IX	135
32	85	28 IXL	128
28 DC	139	25 4X	195
27 2X	155	25 4XL	188
27 2XL	148	24 D2X	210
26 3X	175	23 D3X	240
26 3XL	168	22 D4X	268
26 DX	180		

CHARCOAL TIN PLATES.—The base metal of these plates is specially prepared with a view to securing a high gloss and fine working quality. The trade term "charcoal" is referred to in the description of the coke finish. It is customary to distinguish the amount of coating and degree of finish by letters 1-A, 2-A, etc., up to and including 5-A. 1-A grade has the least amount of coating, and each A signifies an additional quantity. One of the leading manufacturers gives the following tabulation for various brands, showing the approximate weight of coating on both sides of the sheet per base box of 112 sheets, 14 by 20 ins.; for 112 sheets, 20 by 28 in., the weight of coating would be double that shown in the table:

1-A Charcoals	3 lbs.
2-A Charcoals	3 1/2 lbs.
3-A Charcoals	4 lbs.
4-A Charcoals	5 lbs.
5-A Charcoals	6 lbs.
Premier	7 lbs.

It recommends the Premier brand as suitable for all high-class work, such as nickel plating.

TERNE PLATE, generally known as roofing tin, is made by coating steel or iron sheets with a mixture of approximately 25% tin and 75% lead. These plates are made from copper bearing open hearth steel. The manufacturers claim that steel of this character amalgamates with the tin and lead mixture in such a manner as to produce a better plate than is possible with ordinary steel, and as a consequence resists corrosion to a remarkable degree. It is also as soft as the best charcoal iron. Practically all of the roofing tin made prior to 1890 was produced by the palm oil process, but it is



Smoke Lifting Blower.

the Lake Shore and Michigan Southern Ry. at the Englewood locomotive house, Chicago. As this smoke washer was installed in the nature of an experiment, it is impossible as yet to give reliable figures on the cost of such a plant or its operation.

Three large roads, having about 4,500 locomotives, consider that there is no reduction of smoke, due to the superheater alone, all other conditions of operation being the same. Two believe that when locomotive is properly worked, less smoke will be produced with a superheater than without it; this is merely an opinion and not the result of scientific observation. Five believe that there is a reduction in smoke corresponding to the reduction in coal burned. Tests were conducted by the Pennsylvania Rd. at the Altoona testing plant, with both freight and passenger locomotives equipped with superheaters against the same type of saturated steam locomotives. The superheater in freight service effects an undoubted reduction in smoke under the same working conditions. In passenger service, however, a superheater produces more smoke at the low burning rates, while there is a reduction in smoke at the high burning rates. The