catalog items have been eliminated, with no detriment to the industry.

2. The design of heating plants for defense housing units has favored the use of a small number of short, large-sized return air ducts.

3. Furnace sizes have been limited to a top capacity of about 80,000 Btu per hour. Steel furnace production has been severely limited. Attempts are being made to reduce the number of sizes of furnaces manufactured by any company.

Mechanical Warm Air Furnace Systems

1. Trends toward simplification have eliminated entirely return ducts from the second floor. Returns from the first floor in a two-story building have been reduced, and in some cases are limited to one in the living room and one in the stair hall to return the air from the second floor.

2. Both supply and return ducts are fabricated from asbestos products and fiber boards or other substitute materials with metal clips to hold them together.

Central Systems for Comfort Air Conditioning

1. Brick and tile coil supports instead of channel irons have been advocated.

2. Columns and beams for the support of heating and ventilating equipment have been made of wood rather than of structural steel.

3. In view of the curtailment of refrigeration for cooling, a practice has been followed of arranging the outdoor air supply so that the percentage of outside ventilation air can be increased in summer weather. With this arrangement dampered relief openings are provided to allow the excess supply air to discharge outside the building.

Unit Heaters, Unit Ventilators

1. With the exception of the motor, fans, heating element and damper, unit ventilators have been made with the outer casing and other parts constructed of wood and processed wood materials. As a result of this substitution, such units have used about one-third of the steel required in the same unit of all steel construction; or the equivalent of approximately one-half a pound of vital metal per square foot of delivered direct radiation.

2. The casings of unit heaters have been constructed of fiber board sheets instead of steel. Likewise steel has been substituted for the heating element instead of copper and aluminum which were formerly used.

3. Large direct-fired unit heaters burning coal, oil or gas with capacities in excess of 1,000,000 Btu per hour have been made available for heating large spaces. In some instances, the outer casings of these units have been constructed of $\frac{3}{8}$ in. asbestos cement board.

Unit Air Conditioners, Unit Air Coolers

1. The manufacture of small self-contained type air conditioners has been prohibited. Where government orders require such equipment substitute materials have been used in the fabrication of the casings and other parts.

Refrigeration

1. Welded steel refrigerant piping has been used instead of copper.

Heat Transfer Surface Coils

1. Instead of using copper or brass for heating and cooling coils, steel pipe either plain or with steel fins has been used.

Spray Equipment

1. Evaporative cooling has been used where indoor conditions can be maintained within the desired specifications.

2. The tanks of air washers have been constructed of wood and other substitute products.

3. Spray nozzles for air washers and other spray equipment have been made partially or completely of plastics.

Air Cleaning Devices

1. Wood frames have been used for air filters.

Fans

1. Inlet vane control with a single speed motor on fans has replaced the variable speed fan motor, and a control has been added for air volume adjustment.

Air Duct Design

1. Asbestos and processed wood board in lieu of galvanized or black iron and copper for ducts has been utilized.

2. Air ducts have been constructed of tongued and grooved wood, and intentionally oversized, so that at some future date it will be possible to line them with sheet metal.

3. A rigid insulation board faced on each side with a layer of at least $\frac{3}{16}$ in. thick cement asbestos has served the dual purpose of providing a fireproof as well as an insulated duct construction.

4. Blue annealed steel sheets have been used instead of galvanized steel for ducts.

5. There has been a trend toward the use of higher duct velocities in design.

6. Wooden trusses and hangers have been used for supporting the duct work.

7. Painted steel screens instead of brass or copper screens for air intakes is another substitute application that has been utilized.

8. A terra cotta tile flue set on an angle in the wall and wood have been used instead of metal louvers for air intakes. Roof intakes of wood have been constructed.

9. All nickel or chromium plating has been eliminated.

10. Felt has been used instead of sponge rubber for damper blades.

11. Paint has been used as a substitute for galvanizing on ferrous surfaces.

Sound Control

1. Felt has been substituted instead of cork for isolating coil casings, motors, etc.

Instruments and Test Methods

1. Gage boards have been constructed of wood rather than of steel.

Industrial Exhaust Systems

1. Instead of using scarce materials in acid resisting fans, plain steel has been used with a baked plastic coating.

2. Wherever possible, masonry housings have been built for acid proof fans to save high grade alloys previously employed.

Natural Ventilation

1. The housings for roof ventilators have been constructed of wood.

Pipe and Duct Heat Losses

1. Steel lacquered bands on pipe covering have been used in lieu of brass bands.

2. Asbestos, glass wool, expanded vermiculite, etc., have been used instead of 85 per cent magnesia type pipe covering.

3. Rock cork insulation has been utilized for cold air ducts or pipes instead of natural cork.

Water Supply Piping and Water Heating

1. Cement lined steel pipe has been used for cold water instead of brass or galvanized iron.

2. Wood pipe ranging in sizes up to 12 in. has been used for carrying water under pressures of 100 lb per square inch.