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### DESK PHONE HAS TWO HUNDRED PARTS

COMPLICATED MECHANISM

Interesting Description of Construction and Operation of This Facility; Many In Receiver

There are 201 separate parts in the ordinary desk telephone, almost as many as there are bones in the human body.

The number of different parts which enter into the manufacture of the telephone, cables, switchboards, and other apparatus necessary for furnishing the people of the nation with complete service, has been figured out to amount to 110,000, as compared with 3,000 parts for a well known automobile. The materials used in their manufacture come from almost every known section of the earth.

**The Various Parts**  
Of the 201 piece parts of the ordinary desk telephone, nuts, screws, rivets, washers, bushings and insulators and cords account for 114 parts. Then there are the receiver hook or switch hook, as it is called among telephone men, the connecting cord which includes a simple strand of yarn and the strands of a tinsel wound about the yarn, the insulation, tips, lugs and terminals. The remaining 87 parts are units to be assembled with the aid of some of the small parts.

**Individual Drawings**  
Each one of these parts is made to individual drawings, showing shape and dimensions. Many of the dimensions must not vary more than ten thousandths of an inch, for there must be no misfits among these parts. To size them up properly the Hawthorne (Ill.) works of the Western Electric company of the Bell System requires the use of some thirty thousand gages so that it will be possible to pick any one of each kind of part and make a desk stand without any fitting or filing. When the production rate is 5,500 desk telephones a day, the shops have to maintain an output of 478,500 major piece parts and 627,000 of the smaller parts like nuts, washers, etc. This makes a total of 1,100,000 parts to be used for the assembly of telephone desk stands.

**Measuring Parts**  
If it were necessary to measure all pieces by hand, a bright girl would require about one minute to measure each piece and it would take her seven years, working at regular hours to pass one day's output, or it would take 2,100 bright girls to measure the entire output in a single day. By the use of the gages, however, the assemblers are assured that all parts will fit and their task, accordingly, is to see that they are fitted. As these parts are gaged at various stages of their manufacture, it means that when the telephone desk sets are assembled, there is no scrapping of thousands of piece parts that will not fit together. Besides, if each part were fitted individually, each assembly would be a little different from every other assembly.

One of the most interesting of these 201 parts of the ordinary desk set is the telephone receiver which, although apparently a simple device, is produced only by carefully developed design and by intricate, accurate manufacturing processes.

**The Receiver**  
Forty-eight parts, made from steel, iron, copper, brass, nickel, silver, tin, lead, silk, fiber, rubber, paper, paraffin, sublimar and japauning compound, enter into the construction of the receiver. About two hundred operations and as many inspections are required to complete these parts.

The manufacture of the telephone receiver involves intricate equipment and painstaking processes, for while the telephone is an apparently simple device, it performs its functions almost infallibly and when completed, is a highly complicated piece of research laboratory apparatus.

### FAULTY APPLIANCES CAUSE INTERFERENCE

Being mistaken for a bootlegger, highwayman, amateur detective or "harmless nut" is all in the day's work for the radio "trouble hunter."

A recent investigation by the radio engineer for an electric light company led him into all kinds of difficulty while he was searching for causes of radio interference that might have originated on the company's lines or equipment.

As a matter of fact, said the engineer, power transformers seldom interfere with radio reception but, on the contrary, serve as automatic sentinels to keep their own noises from getting out on the power lines and disturbing large areas.

In many cases the interference was traced directly to some faulty lamp socket or loose connection in or near the home of the complaining "fan." Small and inexpensive filters attached to the source of trouble ended this class of noises.

Now the experts say that the way to become beautiful is to exercise your face. Still we have noticed that the most talkative women are not always the most beautiful ones.

Poincaré over in France has just turned 4,000 job holders out of their political offices. Evidently he is not expecting to be a candidate for reelection.

# Green Mill Cleaners

## MONTHLY BULLETIN

DEAR MADAM:

The habit of bundling clothes off to "any cleaner" works detriment to your own satisfaction and to the life of your clothes as well.

"Any cleaner" is never good enough to be entrusted with the processes of renovating—processes which have been as carefully evolved as any industrial science. To renew the "life" of your garments, the cleaning processes should be safe and sure. You are particular about the choice of the clothes when you buy. Why, not, then, be just as careful in selecting the cleaner who restores them?

The Fall season approaches; children are going to school—Winter garments which you will be getting out for additional service, will need refreshing and renewing. Send them to a responsible Cleaner.

Sincerely,  
YOUR CLEANER.

Efficient—Careful



A complete cleaning service means two things—careful and thorough scientific cleaning, and your garments returned almost like new—just when you expected them. It is just this kind of service that has made for us so many customers and friends. Our facilities enable us to give better service and keep delivery promises. Avoid disappointment.



Complete—Dependable



A refreshed suit, tie and hat each week is the best possible letter of recommendation.

Let us restore the original beauty and coloring to your drapes and hangings. A day or two and our modern cleaning service will have them back clean and fresh—almost like new again. We can ably assist you with your house cleaning problems. Pillows, table runners, blankets, lamp shades, etc., are but a few of the many things now being relegated to the care of the cleaner.



HATS—CAPS  
Let us make over your last season's hat



GLOVES  
Scientifically Cleaned



## RUGS

Cleaning by Naptha Process

The superior method carried out by expert craftsmen. Oriental or Domestic—they will be cleaned scientifically, carefully and thoroughly. You'll be pleased!

### —AUTUMN CLEANING MEMO—

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Ladies' Suits

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