

## "Mysterious Mr. A" Is Enthroned



Wearing wonderful robes of gold and a turban studded with priceless jewels, Sir Hari Singh, who figured in the remarkable Robinson divorce case in London, when he was referred to as the "Mysterious Mr. A," was enthroned recently as the maharajah of Kashmir in India, the brilliant ceremony taking place at Jammu, India. Photograph shows Sir Hari Singh seated in center under canopy, during coronation ceremonies.

## "Fire Clown" Telling of Fire Dangers



Harry Rogers of Chicago, known as the "Fire Clown," is in Washington to teach the school children, through his clown antics and miniature fire-fighting apparatus, the dangers of fire started by carelessness. His campaign is being sponsored by the United States Chamber of Commerce.

## Big Job for Pages of Senate



It keeps several of the pages in the United States senate busy tearing up old bills and calendars so that the senators' desks will be cleared for action afresh each morning. Many thousands of pieces of paper must be destroyed each day.

## New Government Measuring Device



In ancient times, it was the magic carpet; today it is the magic proving ring. This is a new device designed by the bureau of standards, the ring being able to measure the load in a testing machine, up to a maximum of 6,000 pounds. Capt. S. N. Petrenko of the engineering mechanics section, the inventor, is shown in the picture.

## LITTLE BITS OF INFORMATION

Submarines now carry seaplanes stored in tubular tanks.

A discovery has been made of a perfect substitute for mercury. European scientists are experimenting in the use of electricity to clean the teeth.

For advertising purposes there has been invented a parchment shade for electric lamps that is revolved by their heat.

Two sleeping cars were run on the Erie railroad in 1843.

Children in the Irish primary schools are required to study the Irish language.

Dr. A. A. Michelson, in measuring the velocity of light, used a set of mirrors 22 miles apart.

Afghanistan will have a new coin, named the "amanah," in honor of Amanullah, the present emir.

## NOT A CAKE



This photograph, taken of a bride of the Black Forest district of Germany, is very interesting. What looks like a cake is a crown or headdress, 12 inches in diameter and 8 inches high, weighing from 6 to 10 pounds, consisting of 10 rows of glass balls and beads in various colors and sizes, embellished with small mirrors and other glittering ornaments. It is worn by all maidens at festivities such as church, family, christening, wedding and social affairs. A bride wears this from early morning until the church ceremony and wedding dinner and until ten at night, when she dons housewifely garb to show her submission to her husband.

## DR. ALBERT WOODS



Dr. Albert Woods, former president of the Maryland State university, is the new director of scientific work in the Department of Agriculture.

## Miniature Writing

Pliny tells of a miniature of the classical age who wrote the "Iliad" in such small space that the parchment containing the 15,000 verses of Homer's masterpiece could be inclosed in an ordinary nutshell.

## Four-Dollar Gold Pieces

The stella, or four-dollar gold piece, was minted by the United States only in 1879 and 1890, and these pieces now command premiums of from \$90 to several hundred.

## POULTRY FACTS

### HATCH GOOSE EGGS WITH INCUBATORS

Goose eggs can be hatched with incubators even to better advantage than with hens for various reasons. Where hens or geese are used, they are apt to break the eggs, and again let them chill. The first eggs from your geese will arrive while the cold weather still continues, and must be picked up early in the morning before they become chilled; geese invariably lay in the very early hours of the morning, or late at night, says a writer in the Rural New Yorker.

Keep eggs in a moderately warm location—around 50 degrees in cold weather. When you have sufficient number to put into the incubator it should be started. Goose eggs, like hens' eggs, hatch best when fresh, not more than ten days old. Place your incubator in a moist, but not too damp cellar, as goose eggs will require much more moisture to hatch than is the case with hens' eggs. Run the machine at as near 103 degrees as is possible from start to finish. Turn eggs twice daily after the beginning of the third day. Always turn goose eggs by hand; handle them with much care. Stop turning on the twenty-fifth day. Goose eggs should be cooled half an hour each day in a temperature not below 60 degrees; if the cellar seems below this temperature, remove the eggs to proper point.

After the third week, sprinkle warm water over the eggs once daily. When goslings begin to pip, if you notice shells are dry and hard, there isn't enough moisture, and unless this is supplied, they will stick in the shells. Keep the eggs quite moist while hatching, by adding a pile plate of wet sand to the bottom of machine. Leave goslings in incubator until all are thoroughly dry, usually 36 hours. Remove them to a box in the kitchen by the stove, unless a brooder has already been provided for. Goslings are easy to raise, and grow very rapidly. Water them in a vessel which cannot be overturned, nor into which they can get their feet. Keep them dry at all times. Feed sprouted oats, gravel, fine cracked corn, or any of the dry mixed chick feeds, but do not neglect always to keep water before them. Change this often; don't let it get dirty.

Mature geese may be picked, or "plucked" once every six weeks after the laying has ceased. Remove only the breast feathers—do not take the down. A little experience will tell you when they are "ripe." Do not take feathers that have blood in the quills.

### Poultry Undernourished Under Farm Conditions

Poultry, of all farm stock, is most likely to be undernourished under practical farm conditions. Due to the nature of their digestive tract, their rations must be composed largely of seeds and seed by-products, feeds ill-balanced with respect to minerals, proteins and vitamins. As compared with other animals, the requirements of poultry for some of the vitamins are relatively so intense that their rations should be supplemented by feeds known to be rich in these factors. Vitamins are manufactured by plants only. Green plant tissues are with few exceptions the best sources of vitamins known, being rich in all these factors.

Young chicks are especially susceptible to a lack of vitamin in the ration and will develop the disease known as "leg weakness," including impaired appetite, an anemic condition of the comb and wattles, drooping wings, ruffled feathers and unsteady gait. Prevention of leg weakness is assured by giving the chicks ready access to green feed such as green cabbage or lettuce leaves, fresh alfalfa or clover or sprouted oats. If green feed is not available, 3 to 5 per cent of cod liver oil in the mash may be used. In the maintenance of health and normal development in the flock the importance of vitamins is undoubtedly much greater than is realized. Rations deficient in vitamins will give rise to digestive disturbances and other forms of vague ill health which can be prevented by supplying the necessary vitamins and adjusting the balance of the food.

### Poultry Notes

The hen that cackles the loudest is not always the greatest layer.

A hen will eat from one to two pounds of oyster shells per year.

More eggs follow a ration that contains the minerals required by a hen than can follow simple grains.

It is generally considered proper, in fact, the best form, to refer to pure-bred poultry as being standard bred.

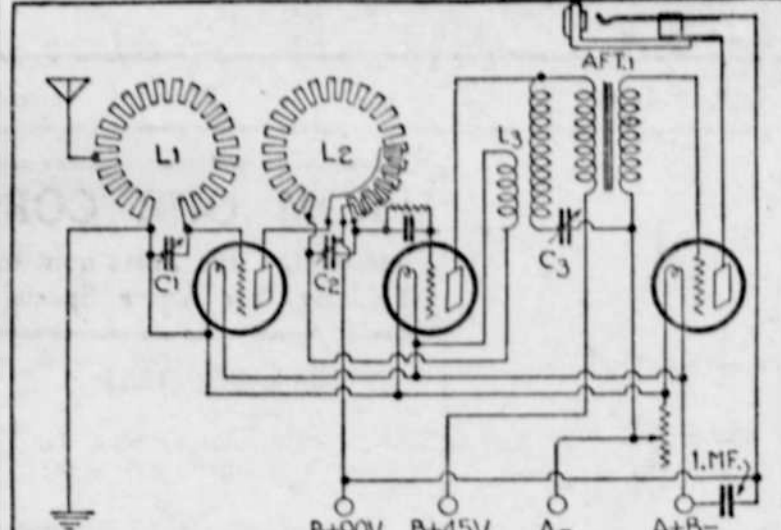
Because of plenty of room in the poultry house and less competition in getting feed, it seems to be more profitable to have too few hens than too many.

Washing soiled or dirty eggs does not make them more salable. In fact, washing an egg lessens its keeping qualities by opening the pores so that evaporation is more rapid.

Don't forget some coarse sand or fine grit for the chicks right from the start. They must have it for proper digestion—it's their teeth.

To keep pullets laying regularly, burn out the tubes or short-circuit the "B" batteries themselves. To avoid short-circuiting the "A" battery circuit, it is also wise to take off at least one wire from the storage or dry cell "A" battery. It is possible

## RADIO



Three-Tube Receiver Unexcelled for Distance, Volume and Tone. Square Wound Toroidal Coils Give the Circuit Selectivity.

Regeneration is one of the most wonderful things of radio, without which the entire broadcasting situation would not have reached its present day perfection. But, the regenerative receiver, as such, has almost become extinct because of its radiating qualities which spoil general reception for miles around, and because it is not selective enough to tune through a number of nearby broadcasting stations.

Regeneration is a great help to any radio set. When used in a sharp tuning receiver it will add sufficient volume to equal a nonregenerative set, using a greater number of tubes. The circuit shown here was devised by engineers of the All-American radio corporation to produce a three-tube set, employing regeneration and radio frequency amplification, combined.

The radio frequency makes it a distance getter and prevents radiation, and the regeneration produces the volume and sensitiveness required to operate satisfactorily under 1926 conditions.

Make Sharper Tuning Set. Toroidal coils make this combination possible, by eliminating interstage coupling. The magnetic field of the transformers is confined in the coils. The toroid coils also prevent the pick-up of local stations by the coils themselves and make a much sharper tuning set. The new All-American shielded straight line frequency condensers are recommended to prevent crowding of the stations on the lower waves.

Only one stage of audio frequency is provided, and if this be constructed with one of the laboratory model

lyric transformers, reproduction of music and speech will be as clear and undistorted as on a one tube set.

The regenerative feature is controlled by a small variable condenser of approximately .00015 mfd. that permits the tubes to be brought gradually up to the point of oscillation, or "hot spot," where reception is best.

The Parts Needed.

Few parts are needed, and the set can be assembled with a 7 by 18 or 21-inch panel and cabinet, without crowding. Two controls, an ideal system of tuning a radio set, are used. To construct the receiver you will need the following list of parts:

One toroid coupler, type T1 (L1).  
One toroid coil, type T2 (L2).  
One universal coupler, type R 140 (L3).

Two straight line frequency condensers, type C35 (C1 and C2).

One variable condenser, approximately .00015 mfd. capacity (C3).

One audio transformer, type R12 (AF1).

One large fixed condenser, 0.5 to 1.0 mfd.

Three sockets.

One grid leak.

One .00025 mfd. grid condenser.

One 6 ohm rheostat.

Binding posts, wire, screws, etc.

The UV199 or C290 type of tubes may be used if the rheostat is 10 to 15 ohms. One rheostat controls the three tubes and it is not advantageous to provide a separate rheostat for each tube. The 45-volt "B" battery binding post is for the detector tube, which should not be of the regular UV200 or C300 type, unless the voltage is lowered to 22½ volts.

## FOREFATHERS OF RADIO

By GEORGE LEWIS  
of The Crosby Radio Corporation.

No one had succeeded in demonstrating how Hertz' discoveries could be made the basis of a practical system. The waves created by Hertz' coil devoted his attention to the problem. The waves created by Hertz' crude apparatus could only be detected at short distances from the apparatus. It was necessary that two things be done before Hertz' methods could be adapted to practical wireless telegraphy: First, it was essential to devise some more powerful means of propagating the waves, and, second, a better detecting device than the

could be accomplished would be multiplied many times. Marconi's earth connection is known today as the "ground," and his suspended wire or plate is what we know as an "aerial" or "antenna."

In the line of detecting devices he improved an instrument first thought of by Branly, and known as the "coherer." This instrument is a relay, enabling the feeble vibrating electric current set up in the receiving circuit by the radio waves to release current from a local battery.

By means of these improvements, Marconi was able to conduct many successful demonstrations of practical wireless telegraphy in England. In 1898, permanent stations were established for communication between Alum Bay and Bournemouth, England, a distance of 14½ miles. A year later communication was maintained between England and France.

## FOR THE NOTE BOOK

Put a fresh grid leak in the set about once a year.

The best solder is made of equal parts of tin and lead.

Fading is much less troublesome in daylight than at night.

Antenna insulators should be cleaned every six months.

Use a "C" battery to reduce the "B" battery consumption.

Hydrometers are not used with nickel-iron storage batteries.

Static noises are worst in a set on the approach of a storm area.

The ground is one of the most important portions of the radio circuit.

Crystal detectors operate as long as the detector is in good condition.

Excessive resin from solder can be removed with alcohol and a soft cloth.

Hawling of a set may be due to filament too high, overregeneration, improper wiring, or instruments crowded.

A condenser connected in series with an aerial will reduce the wave length of the aerial. One connected in parallel will raise the wave length.

## Use Caution in Making Adjustments on Radio

The man who lifts the lid of his radio cabinet and proceeds to tighten a loose nut or binding post without first disconnecting the "B" batteries is inviting disaster to his valuable tubes.

A slip of the pliers, one wire pressed against another, something dropped inside, may mean a short circuit that will burn the tubes out instantly. Remember that your "B" batteries have almost as high a voltage as the house current and, even though not able to deliver as much current, they have many times the power required to send your tubes to the graveyard.

In disconnecting them it is best to take the three wires off the "B" batteries rather than off the set, as loose wires, still attached to the "B" batteries, may go astray while you're not looking and touch other wires, either burning out the tubes or short-circuiting the "B" batteries themselves. To avoid short-circuiting the "A" battery circuit, it is also wise to take off at least one wire from the storage or dry cell "A" battery. It is possible

to burn out a rheostat, burn up connecting wires, and even burn one's fingers by such a short circuit.

Use care in handling the tubes, for if you jar or drop one of them it may loosen the glass, loosen the elements and spoil the operation of the set. This is particularly true of a neutrodyne, which may no longer be neutralized if the tube is internally damaged.

A loose element in the detector often causes a "microphonic" howl, too.

## Poor Arrester Does Harm

A fruitful source of leakage on any good antenna is in the lightning arrester. A poor type of arrester does more harm than good. Only such types should be used as can be opened and gaps cleaned frequently, especially after a heavy electrical storm.

## Hear as They Fly

That airplanes are the ears as well as eyes of the navy scouting fleet was demonstrated by the aircraft squadrons at Guantanamo, which transmitted and received messages within a range of 200 miles.

## GOOD ROADS

### WASTE IS BUGBEAR IN ROAD BUILDING

Few motorists as they roll smoothly over the magnificent pavements now found in many parts of the country realize the detailed and painstaking research which preceded the laying of the pavement. To many, a road is a road, and no matter what the type of surface or the local conditions, road building to them is largely a matter of smoothing the ground and providing some kind of a hard surface.

But had such a policy been followed, millions of dollars would have been wasted, and the country would today be mired in a bog of replacement, repair and reconstruction. Because of the farsightedness of engineers in charge of road building this possible waste has been prevented, and the pavements being laid today are the best possible.

Road construction, as practiced today, is a highly specialized business. Good, permanent construction insures years of earning power and the saving of millions of dollars in transportation costs. Poor construction means waste that mounts into almost countless figures.

Foremost among the possible sources of waste is the construction of roads of lower type than justified by traffic. Tests conducted in many parts of the country have proved that a road should be built according to its maximum requirements rather than to its minimum. A dirt road carrying a traffic of 110 tons per day, in general, will pay for gravel in ten years by the saving in operating costs. Traffic on a dirt road exceeding 610 tons per day or traffic on a gravel road exceeding 1,450 tons per day will, in general, pay for a concrete, brick or asphalt road in fifteen years by the saving. These figures, established by the Iowa highway commission, are today being taken as standard for determining the type of surface justified.

Scientific research has established some remarkable facts about subgrades. Formerly it was held that all soils could be drained, no matter how wet and unstable in their natural condition. On the Bates road in Springfield, Ill., two years were spent in investigating drainage. Tests firmly established the fact that in clay soils, little can be done to reduce the moisture content by drainage. The wastes in highway funds saved through this research returned taxpayers millions of dollars.

Again referring to the Bates test, which is perhaps the most comprehensive yet conducted, tests have made it possible to build a road which is permanent and able to stand up under any given volume of traffic if properly maintained. Through research the public is now protected against building road pavements too light for the volume of traffic which will use the road and which break down under traffic.

Similarly, after having determined the volume of traffic, road builders need not build a pavement too heavy for the traffic the road will carry. This saves overinvestment in road pavements.

### Good Roads Challenge

Hard-surfaced roads eliminate isolation, which signifies progressive civilization. All the country is rapidly forging ahead to that much desired goal when millions of cars and trucks can negotiate the highways without wrecking their high-priced machinery and burning vast quantities of valuable fuel to force their way from place to place by plowing furrows during rainy periods, on all our dirt roads. The hard-surfaced road will present to each town or city through which it passes with remorseless persistence, this ultimatum: "Do or die; function or perish from the earth." If such there be, the builders of each city will decide its destiny and the business men its fate.

### Good Roads Hints

Good roads is a matter of vastly more than convenience or political concern.

The best is the cheapest applies to road construction as well as to anything else.

Good roads are making our farm lands worth more, therefore they are a good investment.

A central system of highways has been established—the federal 7 per cent system of approximately 200,000 miles.

Eighty-eight motorbus companies are operating 800 busses and covering more than 2,000 miles on hard roads in Illinois.

Good roads can only be secured through scientific methods of construction, reliable contractors and time-tested types of pavement.

Some 80,000 miles on the federal aid system have been selected in co-operation with the states for uniform danger and direction sign posting.

The United States is to have 75,864 miles of national roads, selected by the Interstate highways board, and divided into 145 routes, those running east and west designated by even numbers, north and south by odd.

State highway systems are closely co-ordinated and largely coextensive therewith. Both state and federal governments are putting every energy behind the early completion of this system. More than 60 per cent of it is now improved to some extent.