Do You Know?

When *pruning* plants, it is better to prune too little than too much.

The soft outer shell of unripe *walnuts* is rich in vitamin C.

Chinese soldiers are said to keep *quails* for quail-fighting as a sport.

At one time heat was thought to be a weightless fluid called *calor*.

The *century plant,* which has a flower stalk that may be 30 feet tall, belongs to the same order of plants as lilies.

Pink *oysters* have been shown to be infected with a yeastlike fungus, which indicates that they are not strictly fresh although not necessarily injurious.

The leaves of the *foxglove* are gathered for the making of the drug digitalis when the flowers are about two-thirds opened.

Helicopters seem to have secured a place for themselves in American flying; one company reports an initial order for 500 for its latest model that has been granted a federal commercial license.

Synthetic mica found in Germany by United States investigators is reported by them to be as good as natural mica; it contains mixed oxides, fluorides, and silico-fluorides of aluminum, magnesium, iron, chromium and vanadium.

ELECTRONICS-AERONAUTICS

Safer Landings

Will be the result of combining automatic pilot and landing controls. New two-way radio for personal planes will make private flying safer.

➤ A COMBINATION of electronic automatic pilots and automatic landing controls will help airliners make safer landings under weather conditions now called hazardous. A new two-way radio unit for personal planes, which can utilize the outstanding features of both low frequency and very high frequency airways facilities, will make private flying safer. These are two of the important new developments in the aviation field.

The new electronic automatic pilot is a Sperry device to replace the hydraulic automatic pilot used in the past. These pilots, incorporating automatic airport approach facilities, will soon be installed in transports of the United Air Lines. They are not going to replace human pilots, but they will assist, particularly under poor flying conditions.

In actual operations, pilots approaching an airport will set the equipment to receive localizer radio signals. Fed from a special very high frequency airplane radio receiver into the electronic automatic pilot, these will lead the plane to the airport runway.

At about five miles from the airport, the plane's receiver will begin picking up signals from a glide path transmitter on the airport. These will lead the plane automatically down a beam sloping to a point exactly over the end of the airport runway. The human pilot will take over from the automatic pilot at this point and will make the actual landing.

From the time the airport localizer signals are picked up until the plane is directly over the end of the runway, the entire operation will be automatic, with the electronic pilot doing the work and the human pilot monitoring the automatic approach by watching a cross pointer on the plane's instrument board and by checking the standard instruments. As long as the vertical and the horizontal needles of the cross pointer instrument are at right angles, the plane is on course and is making a proper descent down the glide path to the runway.

At cruising altitudes, the electronic pilot will be used much as are the hydraulic pilots. Its controls will be set to maintain cruising elevation and direction.

The new two-way personal plane radio is a product of Raytheon Manufacturing Company. Transmitter and receiver are combined in a single compact unit, that can be quickly installed or removed. Receiver performance, the makers claim, is comparable to commercial airline standards. Its superheterodyne circuit incorporates a stage of radio frequency amplification providing extremely high sensitivity to weak signals.

The transmitter circuit of the Raytheon radiophone has unusually high output to insure communications over extended ranges and adverse radio conditions. All necessary loading circuits for use on any type aircraft radio antenna are self-contained in the transmitter.

Science News Letter, May 4, 1946

ENGINEERING

Coal Turbine Locomotives To Rival Diesel Engines

➤ LOCOMOTIVES powered by coal-burning gas turbines, now in the development stage, can match the cost of diesel-fired locomotives, Dr. John I. Yellott of Bituminous Coal Research, Baltimore, told the American Mining Congress in Cincinnati.

Methods have already been perfected, he said, to pulverize the coal to the fineness of talcum powder by means of a simple air-operated coal atomizer, and an equally simple apparatus has been developed for removing the fly ash from the products of combustion.

With this prime mover, powers of 4,000 to 8,000 horsepower in a single cab are expected. The gas turbine will probably cost less than the diesel. It will be able to burn any solid fuel from bituminous coal to lignite, and relieve railroads of any fear of the increasing costs of liquid fuels.

Science News Letter, May 4, 1946

The quill of the condor is probably the stoutest known *feather* of living birds.

High temperature seems necessary for the production of *acacia gum;* in cooler climates the trees flourish but do not yield gum.