

Physics Forum

Transistors provide power sources

(This column is intended as a forum for airing technical questions of importance with emphasis on how these questions affect our area. It is sponsored by the Membership Advisory Committee of the American Physical Society, a small group of area scientists from industry and education. Questions and comments from the public are invited. Write the Observer & Eccentric, 1225 Bowers St., Birmingham, MI 4804. Attention: Physics Forum.)

of fabrication and makes our electronic conveniences more durable. A comparison between the relatively enormous radius of the 1940's and the battery-operated "pocket" radios of today exemplifies the usefulness of the transistor.

The transistor was discovered about 20 years ago jointly by Dr. Walter H. Brattain, Dr. William Shockley, and Dr. John Bardeen. These three physicists applied a new physical principle which was discovered in the course of fundamental research into the electrical properties of solids. For their contribution, they were awarded the Nobel Prize in the field of physics.

Q. What is the Freon controversy?
A. Until recently Freon and related compounds which are called halomethanes were considered harmless. Since these gases are widely used as aerosol propellants and refrigerants, large quantities of them escape into the atmosphere. Scientists at the University of Michigan now warn us that Freon and its relatives may not be so harmless after all.

Although the halomethanes themselves are chemically inert in the upper reaches of the atmosphere (specifically the stratosphere), sunlight breaks them up into active ingredients. The principal one, chlorine, could upset the ozone balance. Ozone is a special form of oxygen containing three atoms in each molecule in place of the usual two.

It forms a protective layer around the earth, shielding us from strong ultraviolet radiation from the sun. Depletion of the ozone layer by chlorine could result in increases in the number of skin cancer cases. It might also cause damage to crops and changes in our climate.

Q. All birds I've observed flap their wings. How can a massive jetliner stay airborne with stationary wings?

A. To stay in the air, both the bird and the plane must experience an upward force. This force is provided, in large, by the action of the wing flapping across the wings. The wings of both birds and planes are shaped such that the wind flow causes "lift". To increase the wind flow across the wings, the jetliner or bird must be propelled forward. The bird accomplishes this by flapping its wings while the jet engines provide the forward thrust for the jetliner.

Incidentally, sail boats can make use of a similar effect of the wind. There the "wing" (sail) is oriented

perpendicular to the earth's surface, and so the "lift" is directed parallel to the water to help speed the boat on its way.

Q. Why do we get alternating periods of cool and warm weather?

A. Because the winds blow in a clockwise direction around a high-pressure region (in the northern hemisphere) and a train of successive high pressure regions passes from west to east. When the high-pressure region lies to the east of us, the air-flow is then southerly and brings warm, moist air up from the Gulf. If it lies to the west of us, cold, dry air comes down from Canada.

Midway between two neighboring high-pressure regions, the air-flow must change discontinuously from southerly to northerly and this discontinuity is known as a cold front (since cooler weather follows), and is usually attached to a low pressure region. As is well-known, it also provides rain because of the mixing of cold, dry air with warm, moist air.

Hence the succession, warm, humid, weather, rain, wind-shift from southerly to northerly and a temperature drop, rain ending, warming-up over several days as the wind shifts towards a more southerly direction, and so on. In summer, the high often gets stuck near the East Coast (the "Bermuda High") and we get a long period of hot, humid weather.

County board reduces number of committees

By ROBERT KIPPER

OAKLAND COUNTY—The board of county commissioners will operate with fewer but larger committees this year.

In the spirit of "streamlining" county operations, the Republican caucus has proposed that the number of standing committees be reduced from 12 to six and that membership in most cases be boosted from seven to 10 commissioners for each committee. The Republican plan should meet with little opposition when it is considered by the full board during the first meeting of the year on Thursday since it closely resembles a plan proposed by the Democratic caucus in November.

FRED HOUGHTEN, who will be picked 1975 board chairman Thursday, said the new plan represents a strengthening of the committee system. With more commissioners acting on each committee, more members will be better informed, he said.

Most of the proposed committees represent a consolidation of one or more previous committees. Most of them are designed to better coordinate the actions of the board with those of the county executive, since most committees will serve liaison functions with the various super-departments created by the execu-

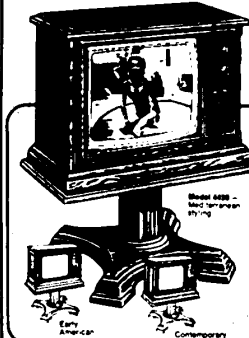
tive's reorganization plan. The Republican plan differs from that proposed by the Democrats mostly in that the all-important Finance Committee will not be a committee of the whole, as the Democrats proposed. The Finance Committee will, however, have one more member than the others. This was because many commissioners wanted on this committee.

THE PROPOSED committees and their chairmen are:
• Finance: Richard Wilcox (R-1), of Orionville.
• Human Resources: Wallace Gabley (R-12), of Royal Oak.
• General Government: Henry Hoot (R-14), of Troy.
• Personnel Practices: Paul Kasper (R-22), of Bloomfield Hills.
• Planning and Building: Patrick Nowak (R-25), of Farmington Hills.
• Public Services: James Dunleavy (R-2), of Highland Township.

Membership on the committees reflects the proportionate strength of each party. Since Republicans hold a majority on the board, they chair each committee and hold five other seats. Four Democrats serve on each committee.

This represents an improved position for the Democrats. During the past two years, when Republicans controlled two-thirds of the board, five Republicans and only two Democrats served on each committee.

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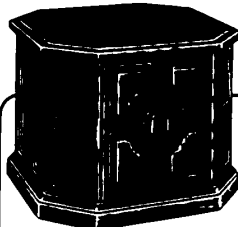
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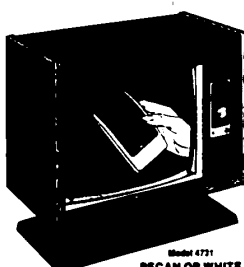
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