Technical briefs

Begins on page 92

application parameters established for available short-circuit currents to 100,000-amp symmetrical. Enclosed safety switches and disconnects have been tested with current-limiting fuses for application on circuits with up to 200,000-amp symmetrical available on short circuit. *AIEE 61-156*

Nuclear developments

Office of Technical Services, U.S. Department of Commerce *have papers interesting to energy-systems engineers:*

40-mwe prototype high-temperature gas-cooled-reactor research and development program (*GA-1235*), Sept 1960, 185 pp, $3.00

Design study of sodium modular reactor (*GEAP-3334*), Jan 1960, 388 pp, $5.00

Nuclear-superheat-project second quarterly progress report for Oct-Dec 1959 (*GEAP-3371*), Sept 1960, 178 pp, $2.75

Quarterly status report of the LASL plasma-thermocouple-development program for period ending Sept 20, 1960 (*LAMS-2473*), Oct 1960, 16 pp, 50¢

Liquid fluidized-bed reactor experiment: final report—TASK 4.00 (*MND-LFBR-2337*), 136 pp, $2.75

Thermophysical properties of irradiated polyphenyl coolants: Part II—density and viscosity (*NAA-SR-4484*), Dec 1960, 56 pp, $1.25

An evaluation of fossil superheat for nuclear-power plants (*NYO-9400*), Oct 1960, 297 pp, $3.50

Gas-cooled-reactor project quarterly progress report for period ending Sept 30, 1960 (*ORNL-3015*), 174 pp, $2.75

Bettis Technical review: Reactor technology (*WAPD-BT-20*), Sept 1960, 131 pp, $2.50

Technical progress report: Pressurized-water reactor (pwr) project for the period Aug 24, 1960 to Oct 23, 1960 (*WAPD-MRP-88*), 97 pp, $2.25

Fabrication of Yankee core I prototype fuel element (*YAEC-144*), May 1960, 52 pp, $1.25

Emissivity and emittance—what are they? (*PB-161-222*), by

Physics refresher

Begins on page 102

until it becomes zero at the horizontal ramp where the ball can't move. Success of experiments of this kind depend on having a perfectly balanced, smooth ball and frictionless ramp. Timing is best done automatically if possible.

Varying initial velocity. In Fig. 5 we let the body start from rest, that is, zero velocity. Now let's study the effects of giving the body various initial velocities. We can assume upward velocities as having a positive sign (+) and downward velocities as negative (—). The acceleration of gravity g of course always acts in the downward or (—) direction.

Fig. 6 shows curves of velocity vs time for four different initial velocities: + 128.8 ft per sec, + 64.4 fps, 0 fps and — 64.4 fps. For the first two the ball is initially thrown upward, in the third the ball is simply dropped from zero velocity as in Fig. 5, and in the fourth the ball is thrown downward at the start. Since g acts in the downward direction (—), all the velocities decrease uniformly with time in accordance with the basic equation (5).

These curves show that for the bodies thrown upward the velocities decrease steadily until they reach zero; then they steadily increase in the downward or (—) direction.

Fig. 7 shows the vertical distances traveled by the bodies of Fig. 6. The body starting with +128.8 fps reaches a height of 257.6 ft above the starting point at 4 sec, and here its velocity becomes zero. Its velocity then grows downward or in the negative direction and it reaches the starting point in 8 sec going at a velocity of −128.8 fps.

The body leaving with an upward velocity of 64.4 fps reaches its highest point of 64.4 ft 2 sec after the start; there its velocity becomes zero. It returns to the starting point at 4 sec with a $v = -64.4$ fps and drops with increasing velocity for further fall.

The body with initial zero velocity drops with steadily increasing speed. The body with initial downward velocity of −64.4 fps uses the least time to reach lower elevations.

Next part will deal with angular motions and start on Newton's laws of motion.