workers have developed small ultracentrifuge mechanisms that are air-driven and create centrifugal forces equal to 7,000,000 times the force of gravity. (*SNL*, Nov. 30, 1935.)

The du Pont apparatus, built by Dr. J. B. Nichols, who studied under Prof. Svedberg when the Swedish scientist was visiting professor of chemistry at the University of Wisconsin, is the industrial outgrowth of these laboratory developments.

Science News Letter, April 11, 1936

ENGINEERING

One-Man Can Operate Motion Picture Theater

A ONE-MAN motion picture theater, which could be completely operated by a single attendant, including ticket selling, the making of change, taking the admission fee, and working the projecting machine is described in a patent (No. 2,032,410) granted to A. N. Goldsmith, of New York City.

By a novel arrangement, the conventional ticket booth would also become the projecting room in which one person could run the whole "show." Use of fire-proof film would eliminate the fire hazard. The film would be of small size so that a complete two-hour show would be contained on a single reel. This eliminates the need for two or more projecting machines usually required where larger film is used, says the inventor.

The two-in-one booth is for use only in the "little theater" or small theater of restricted seating capacity, which charges but a small admission fee. It apparently is not intended to compete with or replace the regular motion picture theaters. The patent has been assigned to the Radio Corporation of America.

Science News Letter, April 11, 1936

BOTANY

NATURE RAMBLINGS by Frank Thone

Hoarders of Life

See Front Cover

VIOLETS, buttercups, spring beauties, trilliums, Jack-in-the-Pulpit, Solomon's seal, May-apple, Lily-of-the-valley, bloodroot, blue-eyed grass, Dutchman's breeches—these and a host of other lovely blossoms we instantly hail as gifts of spring. In a way they are, for they come to us in April and May—a few of the most daring in late March—and may therefore be called the gifts of spring as justly as Christmas presents or birthday presents are assigned to their particular anniversaries.

But Christmas and birthday gifts are prepared in advance of their presentation, and so also are the spring flowers. With hardly an exception, the flowers that star the woods just before and after Easter were prepared for our present delight during the summer that is past. They were paid for out of savings thriftily laid by during a former time of abundance. Their resurrection from seeming death is really just a continuation of a life that is, in a wholly simple and natural sense, everlasting.

Examine the underground parts of any one of the flowers named, or of almost any other spring flower you can find, and you will see a thickened root, or rootstock, or bulb, or corm, or some other form of "storage organ," filled with starch like a potato or with sugar like an onion. This was formed out of the surplus food manufactured by the plant last summer—sometimes during several summers—when no flowers were in sight or immediate prospect. All winter through it lay under ground, compact energy of the sun fixed and hidden away, ready to be liquidated when the returning warmth and light of that same sun should give the word this spring.

Summer flowers, many of them, will be different. There will, of course, be plenty of perennials, long-lived and food-storing plants, among them, but summer plants also include many annuals, plants that grow during one season from seed, form seed for the next year, and then die when frost comes. The longer time they have before their flowers become mature gives opportunity for this short life cycle to complete itself and still leave next year's generation provided for in the scattered seeds.

Of course, the perennials par excellence are the trees, for these store their food in the exceedingly tough and long-lived wood of trunk and roots. It is for this reason, presumably, that most trees —alder and willow, maple and oak, dogwood and redbud, magnolia and tulip-tree and a host of others—are as truly spring flowers as are violets and buttercups.

The enlarged photograph of lily-of-the-valley that appears on the cover of this issue of the SCIENCE NEWS LETTER is by Cornelia Clarke.

Science News Letter, April 11, 1936

Complete architecture of a pharaoh's palace in Egypt is laid bare for the first time by excavations at Thebes by the Oriental Institute of Chicago.