

# 63 Story Building Most Economical

Engineering—Economics

On a piece of city realty, with the land worth \$200 per square foot, a 63-story building will yield the greatest return on the investment. With the land worth \$400 a square foot, which is more nearly the value of land in the Grand Central Terminal region of New York, a 75-story building will pay best. The engineering difficulties of a building as high as 2,000 feet, or nearly 200 stories, could be overcome, but such a structure would not be economically feasible. Even a building of 131 stories would not return any net income.

These are some of the principle conclusions drawn from a study that has been in progress during the last two years, under the direction of W. C. Clark, New York economist, for the American Institute of Steel Construction. Many arguments have been advanced on both sides of the skyscraper question, but the Institute recognized that the decisive one would ultimately be whether or not the tall

building is more profitable than the low one.

For the purposes of the study, the committee considered a specific site in New York near the Grand Central Terminal, on which the Lincoln building, of 52 stories, is now being erected. Plans were actually drawn for eight separate buildings on this location, ranging from 8 to 75 stories. These were of the setback type, required for high buildings by the New York zoning laws. Estimates of costs and income were made for each of these by experienced architects, engineers, builders, building managers and rental agents.

The eight-story building, they found, would cost \$22,193,000 to build, and would yield but 4.22 per cent. on the investment, at a land value of \$200 per square foot. The 63-story building, costing \$39,100,000, would give a return of 10.25 per cent. For higher buildings the return decreases, becoming 10.06 per cent. for a 75-story building. Estimates made of returns

on still higher buildings indicated that at 131 stories the net income would vanish. For higher land values, however, higher buildings are more economical. At \$400 per square foot, the committee found, the 75-story building would give the greatest return.

From an engineering standpoint, Mr. Clark stated, buildings could be built up to 2,000 feet. This limit is imposed chiefly by the elevators, as the weight of the cables would become too large for greater altitudes. Also, he said, the normal human ear drum cannot stand an elevator speed greater than 1,500 feet per second. This speed would have to be attained for practical operation in a building of this size.

At present, the Woolworth Building, 792 feet, or 58 stories, is the world's tallest. The Chrysler Building, now under construction, will reach 808 feet with its 63 stories. The Chicago Tower, now contemplated, may ascend to 880 feet, with 75 stories.

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## Game Laws for World's Largest Beasts—Continued

and the "William Scoresby," maintained out of this income, have been cruising in the Antarctic for several years trying to find out how whales live, where they go, and other questions that have bothered students of the giant cetacea for the last hundred years. The "William Scoresby" is still at sea, but the "Discovery" expedition ended in September, 1927, after examining 1,685 whales, the largest number ever investigated. The dissection of a whale makes more demands on the limitations of time and space than investigations on the anatomy of a frog or a rabbit or even a horse. A scientist needs literally all out-of-doors and a piece of the ocean for a laboratory when he is cutting up a beast that weighs from forty to seventy-five tons. In former years a naturalist was lucky if he ever managed to look into as many as six whales in the course of a lifetime. So the work on the "Discovery" has yielded generalizations about whales formerly impossible to attain.

It is now believed that the whale mating season occurs in the southern winter, that is in June and July. Most of the baby whales, some of them twenty-one feet long at birth,



THE HARPOON GUN instituted a new era in whaling

are born during the same season. Gestation is thought to require ten months. The mothers nurse their young for about five or six months, a period in which growth takes place at a terrific rate. Young blue whales, just weaned, were found to be between 45 and 48 feet long and the fin whale somewhat shorter. Whale's milk must contain potent vitamins or some other magic growth-promoting power, for the rate slows up considerably when the young whales have to rustle for their own food, the scientists found.

The myriads of minute forms of marine life, known as plankton, that float on the surface of the sea and furnish the chief bill of fare for the great whalebone whales, are thought

to be an important factor in that unsolved mystery of the deep, the migrations of whales. Observations on the distribution of plankton were taken on over 2,400 miles of the "Discovery's" course. Further attempts to check on whale meanderings were made by means of numbered metal tags attached to the flukes of young whales. No recoveries of tags, however, have as yet been reported.

The task of working out an effective means for protecting the whale presents many difficult problems, since the giant mammals roam at large on the high seas, a circumstance that leads at once to international complications. Though whalers themselves realize that their industry cannot last much longer at the present rate of killing, each is unwilling to stop until he has positive assurance that the other fellow, representative of some other nation, will do likewise. To overcome this difficulty, the council for whale conservation is endeavoring to cooperate with scientists in other countries who will work toward interesting their respective governments in treaties and regulations to stop their complete extermination.

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