silver will necessarily fall; it sinks about the tenth of an inch for every 100 feet we ascend, or one inch for about 330 yards. By this means the height of mountains is easily ascertained by the barometer; Pascal, about the year 1647, was the first who discovered it; and it is now generally known, that at 1,000 feet above the surface, the Mercury falls to 28.91 inches in the barometer—

	Inches.
At 2,000 feet it falls to	27 86
" 3,000 "	26 85
" 4,000 "	25 87
" 5,000 "	24.93
" 1 mile it falls to	24.67
" 2 "	20.29
" 3 "	16 68
" 4 "	13.72
" 5 "	11.28
" 10 "	4.24
" 15 "	1.60
" 20 "	0.95

Air, by means of its elastic quality, expands and contracts; at 3½ miles above the surface of the earth, it is twice as rare as at the surface; at 7 miles it is four times rarer, and so on, according to the following table, viz.:—

At the altitude of	Miles above the earth's surface, the air is	Times lighter than at the earth's surface.
3½	2	
7	4	
10½	8	
14	16	
17½	32	
21	64	
24½	128	
28	256	

At 500 miles above the surface of the earth, a cubical inch of such air as we breathe would be so rarified as to be capable of filling a hollow sphere, equal in diameter to the immense orbit of the planet Saturn. Were the air in all places above the earth equally as dense as at its surface, it would not be above 5½ miles high.

The elasticity of the air is a quality distinct from its density, or it is, as it were, opposed to it. The greater the density, the greater the elasticity; action and reaction must balance one another—that is, the gravity of the air and its elasticity or expanding quality, will prove equal. Dr. Hales, by means of a press, condensed air into 38 times, and afterwards into 1,551 times less space than that which it naturally occupies.

Dr. Halley, from his experiments at London and at Florence, says, that it is impossible to reduce air 800 times less than its usual bulk or volume; however, Mr. Boyle dilated air 13,679 times its natural space, without the aid of fire.

It is even stated that the air we inspire is compressed, by its own weight, into the 13,679 part of the space it would occupy *in vacuum*. The compression and expansion of air is almost incredible; all the air in St. Paul's Cathedral could be compressed into a nutshell; and what would fit in the eye of a needle, could be made to fill a house. But although air is thus capable of great condensation and expansion, yet still it cannot ever be so compressed as to be congealed as other fluids may: no degree of cold has ever been able to destroy its fluidity.

MANAGEMENT OF CATTLE.

NO. II.

LINCOLNSHIRE BREED.

The Lincolnshire short-horns are coarse about the head and horns, large boned and high on the leg; the loins and hips wide and rugged; their colours are frequently black, blue, dun, and black and white; they are not in much favour in the London markets. They are great consumers of food, and carry a bad description of flesh. They have been considerably improved of late, and the colours now generally seen are red and white; but in the neighbourhood of Folkingham a few duns may be found, this colour having been introduced some years back by Sir C. Buck, of Hanby Grange. Fine herds of the improved short horns are now found in some parts of Lincolnshire.

THE SHORT HORNS, OR HOLDERNESS BREED.

This breed about ninety years ago turned out the long horns. They have large shoulders, coarse necks, and deep dewlaps, but have been much improved of late by crossing with the improved short-horn. The short-horns, as they are called, are a mixture of the Holderness or Teeswater, and they are in great request for the London dairies. The colours should be red or white, or the two combined into a roan or strawberry. They are remarkable milkers, consequently the most essential part is the udder, which is larger in proportion to the animal than in most other breeds. It should be sufficiently large and capacious, broader and fuller before than behind, but not too thick lest it becomes overlaid with fat: the teats should be of a good size, but not too large, placed at equal distances; milk veins large.

The quantity of milk given by some of these cows is truly astonishing; some of them given as much as 32 quarts per day. At the same time their milk does not produce as much butter in proportion as many other breeds. I have always been of opinion that this breed are great consumers of food, but others differ with me in opinion; but when compared with Teeswaters it will be found so in nine cases out of ten.

THE TEESWATER, OR IMPROVED SHORT-HORN BREEDS.

This splendid breed is the pride of Britain and the envy of foreigners. Why should it be otherwise when there is none to compare with it in point of value, early maturity, and perfection of form. Let the objector view the splendid herds of Messrs. Booth of Killerby and Walerby, which are undoubtedly the first in Britain, though others may be more extensive; no breeders have been more steady and persevering in obtaining the enviable situation they enjoy. I have no interest in flattering those gentlemen, but justice demands the assertion; and their success as public exhibitors proves it.

The counties of Durham and York, particularly