EX-LIBRIS
UNIVER-
SIDADE
1934
COLLEGIO
1554
UNIVERSIDADE·DE·SÃO·PAULO
ESCOLA·SUPERIOR·DE·AGRICULTURA
LUIZ·DE·QUEIROZ

Nº 657

S215b

THE BREEDS OF LIVE STOCK,

AND THE

PRINCIPLES OF HEREDITY.

ILLUSTRATED.

BY

J. H. SANDERS,

EDITOR OF "THE BREEDER'S GAZETTE," AUTHOR OF "BREEDERS' TROTTING STUD BOOK," "PERCHERON STUD BOOK," "HORSE-BREEDING," HONORARY MEMBER OF THE CHICAGO ECLECTIC MEDICAL SOCIETY, ILLINOIS VETERINARY MEDICAL ASSOCIATION, ETC.

CHICAGO:
J. H. SANDERS PUBLISHING COMPANY.
1887.

Entered according to Act of Congress in the year 1886,

By J. H. SANDERS,

In the office of the Librarian of Congress, at Washington, D. C.

ALL RIGHTS RESERVED.

CONTENTS.

GENERAL PRINCIPLES OF BREEDING:

General Laws of Heredity — Causes of Variation from Original Types — Modifications from Changed Conditions of Life — Accidental Variations or Sports — Extent of Hereditary Influence — The Formation of Breeds — Terms Used by Breeders — In-Breeding and Crossing — Value of Pedigree — Relative Size of Sire and Dam — Influence of First Impregnation — Effect of Imagination on the Color of Progeny — Effect of Change of Climate on the Generative Organs — Controlling the Sex, . . 9

BREEDS OF HORSES:

Thoroughbreds — Trotters — Orloffs — Cleveland Bays — French Coach Horses — Shire Horses — Clydesdales — Percherons — Boulonnais — Suffolks — Ponies — Mustangs, etc. 77

BREEDS OF CATTLE:

Short-horns — Herefords — Aberdeen-Angus — Galloways — Devons — Sussex — Red Polls — Holstein-Friesians — Jerseys — Guernseys — Alderneys — Ayrshires — Swiss — West Highlanders — Kerrys — Texans, ... 201

BREEDS OF SHEEP:

Merinos — Cotswolds — Leicesters — Lincolns — Oxfords — Southdowns — Hampshire Downs — Shropshire Downs — Cheviots — Sheep Records, etc., ... 425

BREEDS OF SWINE:

Berkshires — Poland-Chinas — Chester Whites — Yorkshires — Suffolks — Cheshires — Essex — Neapolitans — Chinese and Siamese — Duroc-Jerseys — Swine Records, etc., . . . 451

PREFACE.

A little over a year ago I published a volume entitled, "Horse-Breeding," with which was incorporated a chapter devoted to a general review of the laws which govern the transmission of characteristics, both mental and physical, from parent to offspring, especially as applied to our domesticated animals. This chapter met with a much more favorable reception at the hands of educated, practical thinking men than I had dared to hope, and many of my personal friends have since then expressed a desire that I should rewrite and republish it in connection with a work that would be of more general interest to the public than that with which it first appeared. Out of this request the present volume has grown.

In the descriptions of the various breeds of horses, cattle, sheep and swine herewith given, no attempt has been made at minute historical detail. On the contrary, it has been my purpose to be as brief as was consistent with a clear statement of the characteristics of each breed, giving only so much of the origin and course of development in each case as was deemed essential to enable the inexperienced reader to form a correct general idea upon the subject, and to clearly set forth the purposes and uses to which each of the several breeds is thought to be especially adapted. In short, I have aimed to make it a volume of interest and value to the *novice* rather than to the professional stock-breeder; and with this in view I have, in connection with the description of the various breeds, pointed out the works that may profitably be

consulted by those in search of more specific and detailed information concerning any particular breed. Realizing the value of object lessons—the fact that the eye appeals more immediately and forcibly than any other sense to the intellect—I have emphasized my descriptions by giving numerous illustrations—sketches from life of thoroughly typical animals of each breed—so that the inexperienced reader may the more readily learn the points of difference, and the peculiarities of form, color, etc., of each. These illustrations are in most cases faithful likenesses of the originals, and with the descriptive matter given in connection with each, will prove an invaluable aid to a correct understanding of the subject. In nearly every case the sketches have been made from life, and nearly all the noted animal artists of modern times are represented in the volume. Among them may be mentioned Rosa Bonheur, Williams, Steel, Burk, Palmer, Hills, Page, Dewey and Corwine. The engravings have all been made under my own direction, and with three exceptions are all the work of one man, Mr. J. M. Irvin, who has for many years past been in the exclusive employ of the publishers of this book upon work of a similar nature. In this connection I desire also to make some sort of public recognition of the valuable assistance I have derived from my son, Alvin H. Sanders, in preparing the condensed descriptions and histories of the various breeds, and the presentation of interesting facts connected with the animals used as illustrations, and who from his early boyhood has been my constant associate and helper in all my editorial work.

That part of the book devoted to the general principles of breeding is the result of much thought and long and careful study

and observation, and I am confident may be read with profit not only by the novice, but by the experienced stock-breeder as well, and by all who are disposed to investigate the laws which govern the transmission of hereditary qualities from parent to offspring, whether it be in the human species or in the lower orders of animal life. In the descriptions of breeds I have endeavored to be judicially candid and fair, to "nothing extenuate nor set down aught in malice;" and where controverted points have been touched upon, while I have endeavored to state my views plainly, and to sustain them by such arguments and facts as to my mind are conclusive, yet I have tried to do so in a manner that will not prove offensive to those whose opinions and conclusions may differ from my own.

I have not attempted to include in this volume descriptions of all the so-called breeds that are found in various parts of the world, because in many portions of Europe almost every district, county or province has its so-called breeds of horses, cattle, sheep and swine, and an attempt at description of all of these would be of no practical value to American farmers. On the contrary, I have confined my descriptions and illustrations to such breeds as are generally recognized, and have, at least to some extent, been introduced in this country.

In the hope that this book will be found worthy of a place on the table of every intelligent stock-breeder in the land — a book that such men will take pleasure in showing to their friends, as one through which they may readily learn the general principles of stock-breeding, and the characteristics of the various breeds — it is given to the public. While its preparation has involved much

labor, yet it has been "a labor of love," and in it I have found a keen enjoyment. If it shall meet with a kind and appreciative reception at the hands of American stock-breeders, my fondest anticipations in connection with the work will be realized.

J. H. SANDERS.

CHICAGO, December 25, 1886.

CHAPTER I.

GENERAL PRINCIPLES OF BREEDING.

THE general principles which govern the transmission of hereditary qualities from parent to offspring are beyond question substantially the same throughout all animal life. Through the practical application of these laws to the business of breeding domestic animals, which for many years past has so largely occupied the attention of intelligent men in Europe and America, the great mass of our agricultural population have become familiar with their inexorable power and force; and with a knowledge of the immutability of these laws has come a realization of the stern fact that the human species furnishes no exception to their operation. The passage in the Decalogue, which declares that the iniquities of the fathers are visited upon the children unto the third and fourth generation, is clothed with a new and startling significance since it has come to be generally understood that this declaration is a concise statement of the operations of a physiological law, from which there is absolutely no escape. That the physical as well as the mental and moral infirmities and peculiarities of the father and mother are visited upon their children, even *beyond* the third and fourth generations, is as true when applied to the human family as it is of cattle, horses, sheep, and swine.

It is not my purpose to attempt to controvert the great principle that "all men are created equal," which stands as the chief corner-

stone of our political system. Undoubtedly this is true when applied to "rights before the law," but that all men are born physically, morally, and intellectually equal will scarcely be claimed by the most ardent admirer of our democratic institutions. There is a solid foundation in physiological fact for the admiration with which the "first families of Virginia" have been regarded in some parts of our country, and the same may be said of many of our old families in New England and elsewhere in America. Dr. Oliver Wendell Holmes makes his "Autocrat of the Breakfast Table" give utterance to his belief in this great truth and his faith in the value of pedigree in the human family when he says: "I go always, other things being equal, for the man who inherits family traditions and the cumulative humanities of at least four or five generations." To know that a man or woman is descended from an old family whose record has been honorable, beyond reproach and without taint, is the very best possible evidence, next to his own individual record, that he also is worthy of confidence and respect; and a taint in the blood of an opposite character should certainly be regarded with as much distrust as a similar taint in the blood of any of our domestic animals, *and for the same reasons.* What is "bred in the bone" will be transmitted. Beauty of form and feature, strength and force of intellect, elegance and grace of motion, integrity and honesty of character, susceptibility of culture and refinement or boorish stupidity, as well as all the virtues and vices, are as clearly transmissible and inheritable qualities in man as is the color of the hair or the shape of the body in horses or cattle.

A subject of such vast importance, involving as it does so much or weal or woe to the human race, and which places in the hands

of the intelligent stock-breeder such power over the animal kingdom, may well command the attention of thinking men, aside from its practical value as an aid to an intelligent reproduction of desirable forms and qualities in our domestic animals. It has been said of Bakewell, one of the first great improvers of live stock in Great Britain, that he regarded the animals upon his farm as wax in his hands, out of which in good time he could mould any form that he desired to create. In fact all our domestic animals have been, to a great degree, moulded and fashioned by the hand of man. The same uniformity that now characterizes the bison, the elk, and the deer probably belonged to the horse, the cow, the sheep, and the hog, in a state of nature. The ponderous English Cart horse, the fleet courser and the diminutive Shetland pony, are all supposed to have descended from originals that were as uniform in their characteristics as are the members of a herd of bison upon our western prairies. The Short-horn, the Hereford, the Devon, the Jersey, and all of the various breeds into which our cattle are now divided, are descended, it is believed, from the same original type.

CAUSES OF VARIATION FROM ORIGINAL TYPES.

That the changed conditions of life to which animals have been subjected by domestication—the variety of uses to which they have been put, the food upon which they have subsisted, the climate in which they have been reared, and selection for especial uses—have produced the variations which are now so apparent, is generally admitted. Very much of this divergence is due to climatic influences, which alone are sufficiently powerful, in the changes of food and of habit which necessarily follow, to account for nearly all the

varieties which have been produced. A warm climate and a bountiful supply of nutritious food from birth to maturity promotes growth and development, while a scanty supply of nutrition and a rigorous climate have a positive tendency in the opposite direction. A knowledge of the effect of heat and cold upon growth and development has been taken advantage of by breeders for the purpose of producing dwarf specimens. The breeder of Bantam fowls is careful to have his chicks hatched late in the season, so that the early approach of cold weather may arrest development. The bleak, barren and tempestuous islands—lying in the high latitude of 59 and 60 deg.—north of Scotland, with their scanty subsistence and long winters, have dwarfed the horse of that country until he appears as the diminutive Shetland pony, while, from probably the same original, the rich herbage, nutritious grains and mild climate ten degrees further south, on the European coast, have given us the immense draft horses of ancient Normandy and Flanders.

But while climate and the necessarily accompanying influences have done much to cause the divergence which now exists in races that were once uniform, selection by the hand of man has also been actively at work, in some cases co-operating with the influences of climate, thereby accelerating the transformation, and in others counteracting its effect. We have an illustration of this in the horses of Canada. It is quite evident that the causes that have given us the tough, shaggy pony of Lower Canada, if continued without interruption for a succession of generations, and accelerated by the efforts of breeders in selecting animals for the purpose of reproduction, with the same object constantly in view, would in course of time give us a race as diminutive as the ponies of the

Shetland Islands. But this climatic influence has been retarded and counteracted by Canadian breeders, who have rejected the smaller specimens for breeding purposes, and have constantly drawn upon the large draft breeds of Europe for fresh crosses. To such an extent has this infusion of fresh blood been carried for twenty-five years past, especially in Upper Canada or Ontario, that the influences of climate have been overpowered and the progression has been decidedly in the opposite direction. The efforts of Canadian breeders in this direction have been materially aided by the improved condition of agriculture in the Dominion, which has led to a more liberal system of feeding and more thorough protection from the rigor of the climate. And thus the forces and influences of Nature, in some cases aided and in others counteracted by the efforts of man, have constantly been at work breaking up the uniformity which originally characterized all our domestic animals, until divergence from the original type has become, in many instances, truly wonderful.

The influence of selection, in creating divergence from a type singularly uniform, finds a most striking illustration in the case of the domestic pigeon, of which there are now nearly three hundred known varieties, more or less distinct, and all probably descended from the common wild rock pigeon. Among these varieties the divergence is remarkable, not only in the color of the plumage, which in the original is uniform, but in the shape and markings of the various parts. Who would imagine, at first thought, that the pouters, the carriers, the runts, the barbs, the fantails, the owls, the tumblers, the frill-backs, the jacobins, the trumpeters, etc., and all their sub-varieties, with differences so very strongly marked, are

descended from one common parent stock! Yet that this is true, and that all the varieties from the original type have resulted from changed conditions of life, climatic influences, and artificial selection and crossing, is generally admitted by naturalists.

It is one of the principles of heredity, that when there is a great uniformity in a species divergences from the usual type in the offspring are slight and rare; but when this uniformity, from no matter what cause, has been broken up, divergences in the offspring are frequent and great, although there is always present a tendency, more or less powerful, to revert to the original type. This tendency is most frequently manifested when breeds or races, widely differing in their present forms, are crossed upon each other. In such cases, or violent crosses as they are called, it frequently happens that the progeny resembles neither parent, but shows strong marks of the type from which both of its ancestors originally sprung. Darwin gives numerous illustrations of this tendency to reversion in his experiments with pigeons of various breeds and colors, one of which I quote, as follows:

"I paired a mongrel female barb-fantail with a mongrel male barb-spot, neither of which mongrels had the least blue about them. Let it be remembered that blue barbs are excessively rare; that spots, as has been already stated, were perfectly characterized in the year 1676, and breed perfectly true. This likewise is the case with white fantails; so much so that I have never heard of white fantails throwing any other color. Nevertheless, the offspring from the above two mongrels were of exactly the same blue tint as that of the wild rock pigeon, from the Shetland Islands, over the whole back and wings; the double black wing bars were equally conspic-

uous; the tail was exactly alike in all its characters, and the croup was pure white; the head, however, was tinted with a shade of red, evidently derived from the spot, and was of a paler blue than in the rock pigeon, as was the stomach. So that two black barbs, a red spot, and a white fantail, as the four purely-bred grandparents, produced a bird of the same general blue color, together with every characteristic mark, as in the wild *Columba livia*, or rock pigeon."*

This tendency to reversion in different breeds of domestic animals when crossed accounts for many of the disappointments which breeders experience in their efforts to improve their stock and serves greatly to complicate the breeding problem.

MODIFICATIONS PRODUCED BY CHANGED CONDITIONS OF LIFE.

It is quite certain, from what we know of the effect of climate and of changed habits upon animals in a state of domestication, that if two branches of the same tribe or species, essentially alike in every feature, should, by some chance, become separated and compelled to subsist under widely differing conditions of life, being left entirely to themselves and the operation of natural laws, in course of time a very marked difference would occur in their structure or habit. There is a tendency in all animal life to adapt itself to the conditions under which it must exist; but a change may be so abrupt and complete as to overcome this tendency; and

---

* Those who have a desire to investigate this subject, as illustrated by the breeding of pigeons, will find a very full history of the various breeds, their processes of formation, and the effects of selection and crossing of breeds, in Darwin's "Variations of Animals and Plants under Domestication," Vol. I, pp. 163 to 272.

under such a condition the race would speedily become extinct, or gradually die out with a few generations of sickly and enfeebled descendants; but under circumstances less abrupt and unfavorable a few might survive, being those individuals that, from some peculiarity of organization, suffered least from the change. These animals, in their turn, would reproduce the peculiarities of their race, modified, to some extent, by the new conditions which environed them; and these again would produce animals still better adapted to the new order, until in course of time we should have a race widely differing from the original type, created or evolved by a survival of those best fitted to exist under the new order of things, and remoulded and refashioned by the changed conditions of life.

If we accept the commonly-received doctrine of the origin of the human race—that is, that all mankind are descended from a common parentage—we are driven to the conclusion that all the differences which are so apparent in the human family at the present day are the result of the operation of the law of adaptation to changed conditions and of climatic influences, to which I have just referred. And yet there is as great a divergence from a uniform type in the human race as in any of the lower orders of animals that are recognized as belonging to a single species.

In the practical business of breeding domestic animals it is important that due prominence be given to the operation of the laws to which I have alluded; for it follows that a race or breed most perfectly adapted to a certain locality, a certain mode of life, conditions of climate, and character of subsistence, may in time, when transported to a distant clime, or even when subjected to changed conditions of life in the same locality, lose all its distinguishing

characteristics and become practically worthless. On the other hand, a race of but little value in its native state may be so modified by a change in climatic conditions, or by the character, quality, and quantity of the aliment furnished, as to become of the highest value to the breeder; and these modifications, although frequently so slow as to be almost imperceptible in a single generation, are accelerated by the powers of inheritance under a continuation of the conditions which inaugurated them. A high or low temperature, and abundant or scanty nutrition, will, as before stated, affect physical development either favorably or unfavorably. Elevated plains, low marshes, and mountain ranges are each adapted to support a species of animal life in some respects distinct from the others; and hence a knowledge of the effect of the various climatic conditions, and of the different kinds of food, becomes of the utmost importance to the breeder in determining the kinds of stock that he can produce with profit.

There is perhaps no variety of animals that has been domesticated by man in which the effects of climate and nutrition are more apparent than in horses. Temperate regions, grassy plains, and, consequently, abundant nutrition, produce increased size and strength; mountain ranges, with bleak, cold climate and scanty subsistence, dwarf the frame and produce the hardy, diminutive pony. The fertile plains of Normandy and Flanders, with their salubrious climate and abundant herbage, have been the home, from the very earliest period of history, of the ponderous draft horses which still distinguish that region, and have been the source from which all the countries of the world have drawn the foundation for their draft breeds. The bleak and barren Shetland Islands, and the

mountainous tract which lies between the plains of India and the crest of the great Himalaya range, are the homes of races of diminutive ponies, rough, shaggy, and hardy. The highest inhabited land of Asia, which forms the source of the Ganges, the Indus, and the Brahmapootra—a country as rugged and bleak as can well be conceived—contains immense numbers of small sinewy and agile horses. The extreme regions bounded by the mountains of Siberia on the north, the Sea of Okhotsh on the east, and the Little Altaic Mountains on the west—the home of the Kalmucks—abound in a tough and hardy race of ponies.

I have not been able to find an exception to this law of Nature in the history of the world. Wherever the horse has existed for centuries on rich, fertile plains, and in a temperate climate, we find him distinguished for size and strength; wherever he has been the inhabitant of inhospitable, mountainous regions he becomes diminutive and hardy. Of course these results have obtained where the horse is left largely to take care of himself. Man may do much by supplying warm stables and abundant food, and by selection, to counteract the influence of climate, but in spite of his utmost care the tendency will constantly be as Nature has pointed out. Mountainous regions and a rigorous climate will produce the toughest, hardiest horses—as we have seen in the New England Morgans and the Canadian ponies of our own country—while our rich and fertile prairies and luxuriant valleys are adapted by nature to be the home of the ponderous draft horse.

Prof. Low, in his great work, "The Domesticated Animals of the British Islands," has a very interesting chapter on the effect of climatic influences upon animal life, from which I quote the following:

"The effect of heat is everywhere observed, as it modifies the secretions which give color to the skin, and the degree of covering provided for the protection of the body, whether wool or hair. In the case of the human species the effects of temperature on the color of the skin, and, with this, on the color of the eyes and hair, are sufficiently known. We cannot pass from the colder parts of Europe to the warmer without marking the progressive diversities of color, from the light complexion of the northern nations to the swarthy tinge of the Spaniards, Italians, and Greeks; and when we have crossed the Mediterranean into Africa the dark color, which is proper to all the warmer regions of the globe, everywhere meets the eye. The Jews, naturally as fair as the other inhabitants of Syria, become gradually darker as they have been for a longer or shorter time acclimated in the warmer countries; and on the plains of the Ganges they are as dark as Hindoos. The Portuguese who have been naturalized in the African colonies of their nation have become entirely black. If we suppose, indeed, the great races of mankind to have been called into existence in different regions we must suppose that they were born with the color, as well as the other attributes, suited to the climates of the countries which they were to inhabit. It accords with this supposition that the Negro remains always black, even in the highest latitudes to which he has been carried, and that the black races of the eastern islands retain the color proper to them in the mild temperature of Van Diemen's Land. The Mongolian, even in the coldest regions of Northern Asia, retains the hue distinctive of his family, but with a continually deepening shade as he approaches the intertropical countries. The native of China, of a dull yellow tint at Pekin, is at Canton nearly

as dark as a Lascar. The American Indian retains his distinctive copper hue amid the snows of Labrador, but on the shores of the Caribbean Sea becomes nearly as black as an African.

"Temperature likewise affects the size and form of the body. The members of the Caucasian group toward the Arctic Circle are of far inferior bulk of body to the natives of temperate countries. The Central Asiatics, on elevated plains, are sturdy and short, the result of an expansion of the chest; the Hindoos are of slender form and low physical powers, so that they have almost always yielded to the superior force of the northern nations from the first invasion of the Macedonians to the ultimate establishment of European power in the Peninsula. The Negro, on the other hand, in the hottest and most pestilential regions of the habitable earth, where the Caucasian either perishes or becomes as slender as a strippling, is of a strength and stature which would be deemed great in any class of men — affording a strong presumption in favor of the opinion of the distinctness of his race and its special adaptation to the region in which it has been placed.

"In quadrupeds the effects of temperature are everywhere observable in the covering provided for their body, whether wool or hair, and which in the same species is always more abundant in the colder than in the warmer countries. In all quadrupeds there is a growth of down or wool underneath the hair, and more or less mixed with it. In warm countries this wool is little if at all developed; but in the colder it frequently becomes the principal covering of the skin, forming along with the hair a thick fur. In the warmest regions the domestic sheep produces scarcely any wool; in temperate countries he has a fleece properly so called; and in the coldest of all his

wool is mixed with long hair which covers it externally. The wool, an imperfect conductor of heat, preserves the natural temperature of the body, and thus protects the animal from cold, while the long hair is fitted to throw off the water which falls upon the body in rain or snow. But in the warm season the wool, which would be incommodious, falls off, to be renewed before winter, while the hair always remains. The dog, too, has a coat of wool which he loses in countries of great heat, but which in colder countries grows so as to form along with the hair a thick fur, so that in certain cold countries there have been formed breeds of dogs to produce wool for clothing. The dogs of Europe conveyed to warm countries frequently lose even their hair and become as naked as elephants, and in every country their fur is suited to the nature of the climate.

"Similar to the effects of temperature is that of humidity, the hair becoming longer and more oily in the moister countries. Even within the limits of our own islands, the ox of the western coasts, exposed to the humid vapors of the Atlantic, has longer hair than the ox of the eastern districts. Even the effects of continued exposure to winds and storms may modify parts of the animal form. There are certain breeds of gallinaceous fowls which are destitute of the rump, so called. Most of the common fowls of the Isle of Arran, on the coast of Scotland, have this peculiarity. This little island consists of high hills, on which scarcely a bush exists to shelter the animals which inhabit it from the continued gales of the Atlantic. The feathers of a long tail might incommode the animals, and therefore, we may suppose, they disappear; and were peacocks to be reared under similar circumstances it is probable that, in the course of suc-

cessive generations, they would lose the beautiful appendage which they bring from their native jungles.

"The effects, likewise, of altitude are to be numbered among those which modify the characters of animals. In general the animals of mountains are smaller and more agile than those of the same species inhabiting plains. In man the pulse increases in frequency as he ascends into the atmosphere, so that, while at the level of the sea the number of beats is 70 in a minute, at the hight of 4,000 feet the number exceeds 100. The air being rarer a greater quantity of it must be drawn into the lungs to afford the oxygen necessary to carry off the excess of carbon in the system. But gradually, as man and other animals become naturalized in an elevated country, the digestive and respiratory organs, and with these the capacity of the chest and abdomen, become suited to their new relations. Humboldt remarks on the extraordinary development of the chest in the inhabitants of the Andes, producing even deformity; and he justly observes that this is a consequence of the rarity of the air, which demands an extension of the lungs.

"The effects have been referred to of use or exercise in modifying certain parts of the animal form. The limbs of many animals inured or compelled to speed become extended in length, as of the dogs employed in the chase of the swifter animals. The limbs of an animal deprived of the means of motion become feeble and small, as the wings of domesticated birds. In the natural state the cow has a small udder, yet sufficient to contain the milk which her young requires; in the domesticated state, by milking her, the organ becomes enlarged so as to contain a quantity of milk beyond what the wants of her own offspring demand. Nor are the characteristics

thus acquired confined to the individuals on which they have been impressed, but may be transmitted to their posterity."

The lessons taught by these illustrations are obvious. None of our improved breeds are adapted to *all climates* and *all conditions* of life. To be at their best they must each be kept, as nearly as possible, under the same conditions of food and climate as those under which they have attained their excellence. Any material change in either of these conditions is liable ultimately to make a material change in the character of the breed. These changes are usually unfavorable ones, although not necessarily so. Change of itself, when in the direction of better care, more generous feeding and more genial climate, will tend to produce greater size, a more graceful form and greater excellence. At the same time improvement in these particulars is quite likely to be at the expense of what is termed hardiness, or ability to withstand exposure and rough usage.

ACCIDENTAL VARIATIONS OR "SPORTS."

When animals in a state of nature are not disturbed in the enjoyment of the conditions under which they have existed for ages, as the American bison or buffalo, the elk, the deer, the wolf, etc., the uniformity which prevails among all the individuals of the race is remarkable; and all the peculiarities of structure, color, and character are transmitted from generation to generation with almost unerring certainty; and here the maxim of the breeder, that "like produces like," scarcely ever meets with an exception. Such animals are, in the truest sense of the word, *thoroughbred*, or purely bred. There has been no commingling of blood or crossing of various strains to give the race a composite character, and hence when we

have seen the sire and dam we can tell with certainty what the progeny will be. Were any of our domesticated animals *thoroughbreds*, in the sense that the bison, the elk or deer are thoroughbreds, the breeding problem would be a simple one, and like would invariably produce like so long as the conditions of life remained the same. The same principle holds true in the reproduction of vegetable life. An absolutely pure seed reproduces its kind, but when cross-fertilization has once taken place the result is uncertain. If the flower of the Baldwin apple tree be fertilized by the pollen of a Winesap the seed from this union will produce neither the one nor the other. It will be an apple because both of its parents were apples; but as they were of different varieties, or forms, or characters, so the produce will have a character of its own, differing from both of its ancestors. And even if the stigma of the Baldwin be fertilized by pollen of its own kind the result is uncertain, because the parent is itself the result of cross-fertilization. The application of this principle to the crossing of different races of domestic animals is evident, and it will be referred to hereafter.

But, notwithstanding the uniformity of which I have spoken, in the produce of absolutely pure or unmixed races there arises occasionally what is termed an accidental variation from the established type—a *sport*, as it is frequently called. The color of the American deer is of a fixed type, and a departure from uniformity in this particular is very rare—yet a white deer is occasionally found—and so of other animals in which the color is an equally well-established characteristic. Man has five fingers on each hand and five toes on each foot, and in this particular the race is uniform; yet a "sport" is now and then found where the number of fingers or toes is increased

to six. When these accidental variations once occur they are liable, under favorable conditions, to be transmitted by inheritance; but under the ordinary operations of Nature's laws, when the conditions of life remain unchanged, these anomalies usually disappear within one or two generations, and the normal and characteristic type of the race is resumed. A well-authenticated instance of the transmission of accidental variations is found in the oft-quoted case of Edward Lambert, whose whole body, with the exception of the face, the soles of the feet, and the palms of the hands, was covered with a sort of horny excrescence, which was periodically molted. His six sons all inherited the same peculiarity, and the only one of the six that survived transmitted it, in turn, to all his sons. This abnormal characteristic was transmitted through the male line for six generations, and then disappeared.—("Philosophical Transactions," Vol. XVII, p. 23.) It is a very striking illustration of the peculiarities of heredity that the females of this family should have failed to inherit this characteristic. Another remarkable case of this nature that came under my own observation was that of a family residing in Iowa, where the mother and three grown daughters were entirely destitute of hair, but the sons all had quite as much as the average of men. We have also several well-authenticated cases of the transmission, for a few generations, of an abnormal number of fingers or toes, as in the case of the Colburn family, where each of the members had a supernumerary toe and finger, which anomaly was transmitted, although irregularly, through four generations before it entirely disappeared. The writer is personally cognizant of a case in which the second and third toe of each foot were united, and which anomaly has been transmitted for three generations to one

only out of an average of eight descendants in each family. But, as before remarked, when the conditions of life remain unchanged these anomalies almost invariably disappear, and the descendants ultimately resume the typical character of the race.

From the fact that these accidental variations have shown themselves to be, in a limited degree, transmissible by heredity, we may infer that if selections were made with a view to their perpetuation they might ultimately become fixed characteristics. Indeed, there is a considerable weight of evidence tending to show that even variations produced by mutilation, or by other artificial means, are sometimes transmitted, especially when the mutilation has been intimately connected with the nervous system. Dr. Prosper Lucas gives numerous well-authenticated instances of this character, and is decidedly of opinion that variations or mutilations that are the result of disease are transmissible. That eminent scientist, Dr. Brown-Sequard, gives an interesting account of some experiments with guinea pigs. By an operation upon a certain nerve he produced epileptic convulsions; and the produce of the animals upon which this operation was performed manifested the same symptoms.—("Proceedings of the Royal Society of Great Britain," Vol. X, p. 279.) But, notwithstanding the numerous instances given by the eminent authorities above quoted, I am of the opinion that the cases of the transmission of these artificially produced variations are so rare as to be practically of no account in the calculations of the breeder.

The law which governs the transmission of these accidental variations, whether they be the result of a "sport" or of external influences, appears to be that when such variations from the common type are in antagonism to the conditions of life to which the indi-

vidual is subjected the variations are not perpetuated; while, on the other hand, if they are in conformity to the existing wants or conditions, thereby better fitting the individual to succeed in the struggle for existence, natural selection and a survival of the fittest will tend to perpetuate them.

From the foregoing it is evident that the laws of heredity tend to reproduce in the progeny the character of the ancestors, and that when the ancestry is of a fixed and uniform type the maxim that "like produces like" admits of few exceptions. Yet there are exceptions even here, as we have seen in the case of sports; and the modifications produced by changed conditions of life — adaptation to new uses and new modes of subsistence — tend to vary what, under the operation of the unrestricted laws of heredity, would fix a given type and leave the breeder's art powerless to effect change or improvement.

Heredity, which makes of every individual the sum or essence of that which has lived before him, is essentially a conservative force, and opposes all change, all progress, all improvement; but evolution, which compels heredity to give way to internal and external causes and modifies both the physical and mental organism, places in the breeder's hands the means of effecting wonderful changes.

EXTENT OF HEREDITARY INFLUENCE.

I have spoken of two forces that, in their effects, appear to be diametrically opposed to each other — heredity, which makes of every individual the sum or essence of that which has preceded it, and evolution or spontaneity, which constantly tends to give to animal life new forms and to each individual peculiarities which belong to

it alone. Of these heredity is unquestionably the stronger force, because, as I have before remarked, when uniformity has once been established the general principle that like produces like very rarely finds an exception. In fact the influence of heredity is *always* present, and in the reproduction of animal life never fails to assert itself in a greater or less degree. Every living thing brings forth young after its own kind—in some cases the exact counterpart of the parent, and in others slightly modified; but always showing more or less of the parent type. Men do not gather grapes of thorns nor figs of thistles, neither do Short-horn cows bring forth buffalo calves nor draft mares produce thoroughbred race horses. Hence, although we may frequently meet with very apparent differences between the parents and the progeny, yet a moment's reflection will show us that the points of resemblance are always very much greater than those of difference. We are so accustomed to look at the operation of this law in its *details* that we overlook the aggregate of results. We mate a purely-bred Essex sow and boar, and look upon it as a matter of course that the pigs produced will all be black and possess the general characteristics of the Essex breed; but if, having selected our breeding pair with a view to the transmission of a peculiar form of the head or shape of the ear, we find in the produce that few, and possibly none, possess the peculiarity we have sought to perpetuate, we are apt to lose faith in the power of heredity. And yet it would be an argument *against* the uniform operation of this law were the produce all to possess the peculiarity which distinguished the sire and dam, for this was in them an exceptional feature; and the fact that the pigs possessed, in lieu of this peculiar mark, the character that belonged to their ancestors in general is

rather a testimony to the inherent power of heredity than otherwise. Were our pair of pure Essex swine to produce Poland-China, or Berkshire, or Yorkshire pigs there would be room for suspicion as to the blood of the ancestry or for complaint that the laws of heredity had been violated; but such a transgression of Nature's law so rarely occurs that when it does take place we may properly call the result a "sport." Hence, the failure of an individual to reproduce features that are peculiar to itself, or of a pair of individuals distinguished for the same peculiarity to transmit it to their offspring, should excite no surprise in the mind of the breeder. Let it be remembered always that heredity transmits with certainty only what has become a fixed characteristic in the race. Sports, accidental variations and individual peculiarities only occur in opposition to this law, and their transmission is at best uncertain. Heredity may be depended on to govern the general characteristics which determine the species and the less general ones which distinguish the breed, but when we come to individual characteristics, which have never acquired a fixed character in the ancestry, it frequently fails. In short, *the transmission of the greater share of all the characteristics is a thing of universal occurrence*, but their transmission *in toto* is an ideal conception that is never realized; and only in proportion as the ancestry has assumed a fixed and unvarying type do we find this ideal of the effect of heredity approximated.

That peculiarity called atavism, or reversion, so often noticed in our domesticated animals, and which has so frequently set at naught the calculations of the breeder, has often been quoted as an illustration of the failure of the law of heredity; but it is in fact only a tribute to its power. By selection, change of climate or nutrition,

or by crossing, or by all of these means combined, we may succeed in obliterating certain well-defined characteristics, and in modifying a given type, until the new form or character that we have created will, in its turn, be transmitted with reasonable certainty; but suddenly the germ that has lain dormant for so many generations asserts itself, and, greatly to our surprise, the characteristics of the original stock reappear. As I have before remarked, these cases of reversion most frequently occur when cross-breeding is resorted to. The counter currents of hereditary influence, which are by this means brought into contact, having a common origin, appear to awaken into being the germ which has for generations been a silent factor in each of the newly-created breeds, and enables it to again assume control of the organism.

In addition to the general and well-defined operation of the laws of heredity to which I have alluded, its operations in the transmission of individual characteristics, although not clearly defined, and never to be depended upon, are often wonderful. The son is frequently, in some respects, the exact duplicate of the father, and the daughter of the mother. Sometimes a peculiarity which belonged to the grandsire lies dormant in the son, but crops out as strong as ever in the second or third generation. Again, we find peculiarities transmitted from father to daughter, and from mother to son, and even special sexual characteristics transmitted by the father through a daughter to a grandson, or by the mother through a son to a granddaughter; but it is worthy of remark that in no case are all the peculiarities of any one individual transmitted. Indeed, it would be strange were it otherwise, because each individual is the joint product of two other individuals, each endowed with

peculiarities of its own; and that each should transmit itself as an entirety is absolutely impossible. Rarely do we find in the individual so produced a blending of these peculiarities in exact proportion—as one might theoretically argue would be the result were the parents of equally well-established types—but rather that in some respects the offspring resembles the father, in others the mother, in some forming a partial or exact mean between the two; and in still others we find the produce apparently unlike either, but possessing an individuality or character peculiarly its own. I might illustrate this by instances from the experience of many breeders, but it is not necessary. The effect has been observed by all who have given any attention whatever to the subject of breeding.

THE FORMATION OF BREEDS.

I have spoken of the uniformity which characterizes animals of a given species in a state of nature, and of the various causes that serve to disturb this uniformity in our domesticated animals when subjected to changed conditions of climate or nutrition. I have also treated of the effect of heredity, which makes of the offspring the sum or essence of the qualities that existed in its progenitors, and of the opposing law of evolution or spontaneity which tends to give to each animal a character of its own. I now propose to consider how these known laws and forces may be utilized in the formation of breeds; and, at the threshold of this division of my subject, it is necessary that we should understand what is meant by the terms used.

The animal kingdom is divided by naturalists into four great branches—*Radiata*, *Mollusca*, *Articulata*, and *Vertebrata*. These

branches are again divided into classes. The *Vertebrata*, to which branch all our domesticated animals belong, are divided into eight classes, the last of which are the *Mammalia*, embracing all animals that give suck to their young. These classes are divided into genera, and these again into species. For example: we have the genus *Equus*, of which the horse, the ass, the zebra, and the quagga are species; and these different species are again divided, with reference to certain peculiarities, into breeds. A breed, therefore, is a classification by which we distinguish a group of animals possessing qualities which are not common to all animals of the same species, and which peculiarities have become so firmly established that they are uniformly transmitted by heredity. Thus, we have the Shetland ponies, a breed of horses possessing all the general characteristics of the species to which they belong, but especially distinguished from other breeds by their size and form; and the Devons, a breed of cattle uniformly of a deep red color, and possessing other distinctive features that are not characteristic of any other breed of cattle.

It will be observed that these divisions, from first to last, are more or less arbitrary; and, as it is impossible to define exactly the point where the mineral kingdom leaves off and the vegetable kingdom begins, or to distinguish positively the line of demarcation between vegetable and animal life, so throughout the entire animal kingdom the various divisions or classes approach each other by almost imperceptible gradations, until in many cases it is impossible to locate the dividing line. This is especially true of breeds. We may assume any standard that our fancy may dictate, as the color or texture of the hair; the shape or size of any particular part of

the body, as the head or the ear; any particular function, as the quantity or quality of the milk in cattle; peculiarities of locomotion, as the trot or pace in the horse; of habit or instinct, as exemplified in the Setter or in the Shepherd dog, etc.; and classifying with reference to the possession of any of these assumed peculiarities we may divide a species into breeds. Theoretically there is no limit to the extent to which this division into breeds might be carried; but practically it is confined to marked differences in *appearance*, *function*, *use*, *disposition*, or *quality*. And whenever we have, by any means, produced a group or family of animals that possess and transmit uniformity in any particular, in which there is a lack of uniformity in the species to which they belong, they are fairly entitled to be classed as a breed.

Taking advantage of the almost numberless shades of divergence from the original type to be found among the different species of domesticated animals, the laws of heredity and spontaneity enable man to work wonderful transformations and improvements by selecting such individuals as most nearly approximate to his ideal and which manifest a tendency to assume the desired form. By coupling such individuals there is a probability that the quality for which they were selected will be reproduced in the offspring, and that it will be even more prominent than in the parents. I say there is a *probability* that this will be the result, but it is by no means certain, for it must be borne in mind that only the general and firmly-fixed characteristics which distinguish the species are transmitted with absolute certainty, and the transmission of accidental qualities or especial excellence in any given particular, while always possible, can never be depended upon with certainty. If, however, we select

parents both distinguished for the same accidental variation or accidental excellence the chances that it will be transmitted to the offspring are, theoretically, twice as great as when only one of the parents is in possession of the desired quality; and if in the produce from this coupling we see manifestations of the desired tendency we may unite animals so bred with an increased probability that they, in turn, will transmit it to their offspring. It is mainly by this process of careful selection and coupling, with a view to the possession of certain desirable qualities, persevered in for many generations, that all noted breeders have succeeded in moulding the forms or establishing the breeds that have given them celebrity.

It must be borne in mind that the very processes of Nature which make it possible for man to effect improvement in any species of domesticated animals conspire to make the work of creating a new type from heterogeneous materials extremely difficult. In making selections with a view to perpetuating any variation from an established type we must always begin with such individuals as have manifested a tendency to assume the desired form and transmit it to their offspring. With a mixed and heterogeneous ancestry, representing various shades of divergence from the original type of the species, progress in any given direction by selection will, under the most favorable circumstances, be slow, and the results will frequently be anything but satisfactory. There is always a tendency in the offspring of a mixed or improved race to revert to the original form of the species from which it is derived. This I have shown is most apparent where animals of a widely different character are coupled, as in the case of cross-breeding with distinct varieties or breeds, which, although not without its compensating

advantages in many cases, introduces new elements of divergence. Hence the breeder will often find failure where he most expected success. The force of heredity is usually exerted to compel the progeny to adhere to the character which has become fixed in the species, rather than to follow variation from the established type that was accidental or spontaneous in the immediate ancestry; but when, through selection of both parents with reference to this particular for several generations, the influence of heredity has once been enlisted in the transmission of an accidental variation it lends its powerful aid in favor of the perpetuation of the improved form. Spontaneity may occasionally interpose a new feature or atavism turn us back toward the original, but by continuing to select from the families which have been bred with reference to the desired form we shall eventually succeed in fixing the new type so firmly that its transmission will be the rule and failure the exception; and when this point has been reached we have succeeded in forming what may justly be called a breed.

TERMS USED BY BREEDERS OF LIVE STOCK.

The term *thoroughbred* is often applied in this country to animals belonging to any of the distinct breeds, but in Great Britain it is seldom so applied. There it is used only as the name of a particular breed of horses — the race horse or blood horse — and the usage among intelligent horse-breeders in this country is the same as that prevailing in England, no horse being spoken of as a thoroughbred unless he belongs to the breed especially designated by that name. American cattle-breeders, however, frequently speak of thoroughbred Short-horns, thoroughbred Devons, thoroughbred Here-

fords, etc.; and the same usage obtains to a considerable degree among the breeders of sheep and swine in this country. The terms thoroughbred, full-blood, and purely bred, as generally used by American breeders of cattle, sheep, and swine, are practically synonymous, although some writers and some local agricultural societies have dogmatically attempted to make a distinction in their use; but, as commonly understood in this country, when an animal is said to be a thoroughbred, or a full-blood, or as purely bred, the meaning is that the animal spoken of is recognized as belonging to some one of the distinct breeds, and entitled to registry as such in the herd or stud book of that breed. Animals belonging to none of the recognized or established breeds are usually referred to as *common stock*, and the produce, when one parent belongs to an established breed and the other is of common stock or of unknown breeding, is called a *grade*, or half-blood. The produce of a purely-bred animal and a half-blood is also called a grade, and this process of grading up may be carried on indefinitely until the number of crosses of pure-blood is sufficient to entitle the animal to registry in the stud or herd book of the given breed; although with some of the herd books no number of pure crosses will entitle the produce to registration. An animal with one or more crosses of pure Hereford, or Jersey, or Devon blood upon an unknown ancestry, is spoken of as a grade Hereford, grade Jersey, grade Devon, etc.; and when the number of pure crosses is considerable the animal is called a *high grade* Hereford, Jersey, or Devon, as the case may be. The produce of a sire and dam of different breeds is said to be *cross-bred;* and this term is frequently applied to the produce of a purely-bred animal of one breed and a high grade of another.

IN-BREEDING AND CROSSING.

It has been claimed by many that success in establishing desired forms or qualities may be obtained with the greatest certainty, and in the least possible time, when selection is confined to the same family. Thus, we find a certain male that manifests an unusual degree of excellence in some particular, and which, it has been found, he usually transmits to his offspring. We select a female manifesting the same tendency, and the two are coupled. Possibly the offspring may not show a trace of the unusual excellence we have sought to perpetuate. We reject this, and couple the same sire and dam a second time, and perhaps we are rewarded by offspring possessing the desired quality. This produce, if a female, when of proper age is coupled with her own sire, and this produce again, if a female, is bred to the same male, that was her sire as well as her grandsire. This process is sometimes resorted to for three or four successive generations, with a view to intensifying or perpetuating a quality for which the sire is especially noted, and which it is found he transmits with certainty; for it is a well-known, although inexplicable fact, that of two animals bred precisely alike, and manifesting the same spontaneous variation, one will transmit the peculiarity with considerable certainty, while not a trace of it will appear in the produce of the other. The same course of breeding is often resorted to by coupling the son with his own dam, and then, if the produce be a female, using upon her the same male, that is both brother and sire. This process of coupling near relatives, which is known as breeding in-and-in, is unquestionably very effectual, and is frequently the only available source from which breed-

ing stock can be obtained that possess and transmit the desired quality. But there is always danger that such a course of breeding will result in a loss of constitutional vigor and fertility in the produce, and it should be practiced with great caution. As soon as any constitutional defect or weakness is noticed as the result of breeding in-and-in an infusion of fresh blood must be obtained by resorting to a male or female not closely related, but possessing as nearly as may be the desired quality. It should be borne in mind that defects are quite as liable to be transmitted as good qualities, and while we are fixing a type of superior excellence in one particular we should be careful that we are not, with equal certainty, perpetuating a serious defect.

It is believed by many that breeding in-and-in has a refining tendency—that its effect is in the direction of fineness of texture, lightness of bone, smoothness, evenness and polish, at the expense of robustness, strength, vigor, and power; hence, it is one of the most potent of agents in the production of dwarf breeds, and the main reliance of breeders of Bantam fowls and other diminutive races. It is certainly a powerful and invaluable agent in the hands of an intelligent person in the formation or modification of a breed, but can never be successfully followed by general farmers, who must produce hardy, prolific, and vigorous animals.

The great number of intermarriages which took place in the royal family of Egypt during the reign of the Ptolemys has occasionally been referred to by the advocates of close in-breeding; and the magnificent personal appearance of these rulers, their close resemblance in form and feature, and especially the widely-famed beauty of countenance and form, as well as the mental vigor dis-

played by Cleopatra, the last of the line, have often been quoted as a strong argument against the theory that breeding in-and-in necessarily produces physical deterioration; but a close examination of the line of descent leaves the balance of the argument rather on the other side. Galton, in his "Hereditary Genius," in speaking of this family, says:

"This race of Ptolemys is at first sight exceedingly interesting, on account of the extraordinary number of their close intermarriages. They were matched in-and-in like prize cattle; but these near marriages were unprolific—the inheritance mostly passed through other wives. Indicating the Ptolemys by numbers, according to the order of their succession, II married his niece, and afterward his sister; IV his sister; VI and VII were brothers, and they both consecutively married the same sister—VII also subsequently married his niece; VIII married two of his own sisters consecutively; XII and XIII were brothers, and both consecutively married their sister, the famous Cleopatra. Thus there are no less than nine cases of close intermarriages distributed among the thirteen Ptolemys. However, when we put them into the form of a genealogical tree we shall clearly see that the main line of descent was untouched by these intermarriages, except in the two cases of III and VIII. The personal beauty and vigor of Cleopatra, the last of the race, cannot therefore be justly quoted in disproof of the evil effects of close breeding. On the contrary, the result of Ptolemaic experience was distinctly to show that intermarriages are followed by sterility."

Galton then proceeds to show that nearly all of these incestuous marriages were unfruitful, the only exceptions being that of Ptolemy II with his niece, from which was produced Ptolemy III, and Ptolemy

VII with his niece, the produce being Ptolemy VIII, the grandfather of Cleopatra, the descent in all other cases passing through wives that were not nearly related to this family.—("Hereditary Genius," by Francis Galton, p. 152.)

The testimony of experienced naturalists and of intelligent and careful observers among practical breeders is uniformly in favor of the proposition that a cross in the blood gives increased size and vigor to the produce. It is an equally well established fact that cross-breeding, or the pairing of animals of distinct varieties, usually results in increased fertility; but it is rather singular that, while this result usually attends the pairing of distinct varieties of the same species, yet if cross-breeding be carried so far as to unite distinct species, although increased size and vigor are still attained, fertility is almost entirely lost. A familiar illustration is seen in the produce of the horse and the ass. The mule, resulting from such a union, is often larger than either parent, and is noted for his hardiness and powers of endurance, but the power of reproduction is totally wanting. The same is true of most other hybrids. It is a singular fact that a loss of fertility is also one among the very first bad results manifested from long-continued breeding in-and-in—which is the converse or opposite of violent out-crossing; and yet all experience proves this to be true.

The space that can be devoted to a discussion of this branch of the subject will not admit of an elaborate investigation of the principles of genesis by which this apparent contradiction is explained. The majority of my readers are more concerned with facts and results than with theories and philosophical abstractions. But, at the risk of giving more of theory than will be relished, I will ven-

ture to state that, in order to produce a sexual union which shall be fruitful, and call into life a new organism, according to the opinion of most scientists, it is essential that the sperm-cell and the germ-cell, which, united, form the source of life to the new being, shall each proceed from a different organism; and that breeding in-and-in, as usually practiced—being the selection of individuals of as nearly as may be a similar organization, with the avowed purpose of creating uniformity of character—will, in the course of time if not counteracted by opposing influences, produce such a unity of organism in the members of a given family as will result in a loss of that differentiation which appears to be necessary to insure the fusion of the sperm-cell of the one with the germ-cell of the other.

In commenting upon this aspect of genesis, Herbert Spencer says:

"Remembering the fact that among the higher classes of organisms fertilization is always effected by combining the sperm-cell of one individual with the germ-cell of another, and joining with it the fact that among hermaphrodite organisms the germ-cells developed in any individual are usually not fertilized by sperm-cells developed in the same individual, we see reason for thinking that the essential thing in fertilization is the union of specially fitted portions of *different* organisms. If fertilization depended on the peculiar properties of sperm-cell and germ-cell, as such, then in hermaphrodite organisms it would be a matter of indifference whether the united sperm-cells and germ-cells were those of the same individual or those of different individuals. But the circumstance that there exist in such organisms elaborate appliances for mutual fertilization shows that unlikeness of derivation in the united reproductive centers is the desideratum."—("Principles of Biology," Vol. I, p. 279.)

After explaining at some length the apparent contradiction of this theory which is found in plants that are self-fertilizing, Mr. Spencer further remarks:

"There is reason to believe that self-fertilization, which at the best is comparatively inefficient, loses all efficiency in course of time. After giving an account of the provisions for an occasional, or a frequent, or a constant crossing between flowers, and after quoting Prof. Huxley to the effect that among hermaphrodite animals there is no case in which 'the occasional influence of a distinct individual can be shown to be physically impossible,' Mr. Darwin writes: 'From these several considerations, and from the many special facts which I have collected, but which I am not here able to give, I am strongly inclined to suspect that, both in the vegetable and animal kingdoms, an occasional intercross with a distinct individual is a law of Nature. * * * In none, as I suspect, can self-fertilization go on for perpetuity.' This conclusion, based wholly on observed facts, is just the conclusion to which the foregoing argument points. * * * If, then, in a self-fertilizing organism, and its self-fertilizing descendants, such contrasts as originally existed among the physiological units are progressively obliterated—if, consequently, there can no longer be a segregation of different physiological units in different sperm-cells and germ-cells, self-fertilization will become impossible; step by step the fertility will diminish, and the series will finally die out."—("Principles of Biology," Vol. I, pp. 281, 282.)

A similar view of this subject is presented by Mr. Darwin in a letter published in the London *Agricultural Gazette* of May, 1878, from which I extract the following:

"I will venture to add a few remarks on the general question

of close interbreeding. Sexual reproduction is so essentially the same in plants and animals that I think we may fairly apply conclusions drawn from the one kingdom to the other. From a long series of experiments on plants, given in my book 'On the Effects of Cross and Self-Fertilization,' the conclusion seems clear that there is no mysterious evil in the mere fact of the nearest relations breeding together; but that evil follows (independently of inherited disease or weakness) from the circumstance of near relations generally possessing a closely similar constitution. However little we may be able to explain the cause, the facts detailed by me show that the male and female sexual elements must be differentiated to a certain degree in order to unite properly and to give birth to a vigorous progeny. Such differentiation of the sexual elements follows from the parents and their ancestors having lived during some generations under different conditions of life.

"The closest interbreeding does not seem to induce variability, or a departure from the typical form of the race or family, but it causes loss of size, of constitutional vigor in resisting unfavorable influences, and often of fertility. On the other hand, a cross between plants of the same sub-variety, which have been grown during some generations under different conditions, increases to an extraordinary degree the size and vigor of the offspring.

"Some kinds of plants bear self-fertilization much better than others; nevertheless it has been proved that these profit greatly by a cross with a fresh stock. So it appears to be with animals, for Short-horn cattle — perhaps all cattle — can withstand close interbreeding with very little injury; but if they could be crossed with a distinct stock without any loss of their excellent qualities, it would

be a most surprising fact if the offspring did not also profit in a very high degree in constitutional vigor. If, therefore, any one chose to risk breeding from an animal which suffered from some inheritable disease or weakness, he would act wisely to look out not merely for a perfectly sound animal of the other sex, but for one belonging to another strain, which had been bred during several generations at a distant place, under as different conditions, as to soil, climate, etc., as possible, for in this case he might hope that the offspring, by having gained in constitutional vigor, would be enabled to throw off the taint in their blood."

The view of the case presented by Darwin and Herbert Spencer in the foregoing extracts affords an explanation of many apparent contradictions which result from breeding in-and-in. The farmer who *permits* his stock to pair miscellaneously, without infusing fresh blood for many generations — as is the case with some — must necessarily practice breeding in-and-in; but, as in such cases the stock is almost invariably, at the beginning, of a heterogeneous character, it will require a much greater period of time before breeding in-and-in shall have produced a sufficient degree of unity of organism to interfere with fertility or to cause a loss of vitality than in cases where the stock, to begin with, is of a uniform type or "purely bred." In such cases, also, there is no effort on the part of the farmer to produce uniformity by selection of individuals for coupling. If there be any selection at all the standard by which it is made is a capricious one, changing from year to year; and it is a well-known fact that in such hands uniformity of type is never reached, neither have any bad effects usually been observed from in-breeding under such circumstances.

If the theory above advanced be correct no bad effects will necessarily result from breeding in-and-in until uniformity of type, which implies unity of organism, is attained; and this, as we have seen when breeding from a mixed stock, is a very slow process.

Upon this aspect of the case Herbert Spencer remarks:

"Relations must, on the average of cases, be individuals whose physiological units are more nearly alike than usual. Animals of different varieties must be those whose physiological units are more unlike than usual. In the one case the unlikeness of the units may frequently be insufficient to produce fertilization; or if sufficient to produce fertilization not sufficient to produce that active molecular change required for vigorous development. In the other case both fertilization and vigorous development will be made probable.

"Nor are we without a cause for the irregular manifestation of these general tendencies. The mixed physiological units composing any organism being, as we have seen, more or less segregated in the reproductive centers it throws off, there may arise various results, according to the degrees of difference among the units and the degrees in which the units are segregated. Of two cousins who have married the common grandparents may have had either similar or dissimilar constitutions; and if their constitutions were dissimilar the probability that their married grandchildren will have offspring will be greater than if their constitutions were similar. Or the brothers and sisters from whom these cousins descended, instead of severally inheriting the constitutions of their parents in tolerably equal degrees, may have severally inherited them in very different degrees; in which last case intermarriages among the grandchildren will be less likely to prove infertile. Or the brothers and sisters

from whom these cousins descended may severally have married persons very like or very unlike themselves, and from this cause there may have resulted either an undue likeness or a due unlikeness between the married cousins. These several causes, conspiring and conflicting in endless ways and degrees, will work multiform effects. * * * Hence it may happen that among offspring of nearly-related parents there may be some in which the want of vigor is not marked, and others in which there is decided want of vigor. So that we are alike shown why in-and-in breeding tends to diminish both fertility and vigor, and why the effect cannot be a uniform effect, but only an average effect."—("Principles of Biology," Vol. I, pp. 283, 284.)

It follows, then, as a practical deduction from the foregoing, that the more purely bred and uniform in type our stock becomes the greater is the danger from breeding in-and-in. That while, as before remarked, it is a powerful agent in the hands of a skillful and intel ligent person in the formation of a breed, it must be used with the greatest of caution with animals of a uniform type, and that with miscellaneously-bred stock its evil effects are comparatively slow in showing themselves.

Many who have given the subject of breeding *as a science* only a casual investigation—who have studied only the methods of a Bakewell, a Colling, a Booth, or a Bates, without taking into account the *circumstances under which these methods were practiced*—have hastily adopted the conclusion that what was successful in such hands as theirs must still be correct in practice; that because Bakewell and Colling bred in-and-in to fix a desired type, and by continuing that process for a time succeeded in effecting substantial

improvement in their cattle and sheep, it must necessarily follow that the surest method of preserving the excellence attained by them is to continue in precisely the same road. Or, to put it rather more mildly, because in the *formation of a breed* these men experienced little if any damage from the practice of breeding in-and-in to the extent to which they carried it, modern breeders of pedigreed stock can continue to breed in-and-in with impunity!

There is no one point upon which practical breeders, as well as scientists, are more perfectly agreed than that the ultimate tendency of breeding in-and-in is injurious—that when carried to *excess* it will always result in a loss of constitutional vigor in the produce; that while its tendency may be in the direction of fineness of texture, lightness of bone, smoothness, evenness and polish, it is invariably at the expense of robustness, strength, vigor, and power. On the other hand, scientists as well as practical breeders, with perhaps equal unanimity, concur in the belief that a cross in the blood usually gives increased size and vigor to the produce, and that cross-breeding, or the pairing of animals of distinct varieties, usually results in increased fertility.

The belief has largely obtained among practical farmers and feeders that all purely-bred races or breeds are lacking in hardiness and stamina; and that when breeding for the dairy, the shambles, or for practical use on the farm, the greatest measure of success is attained through the medium of cross-breeding. The first of these assumptions is not necessarily true. When the breeding and management of purely-bred races have been in accordance with Nature's laws there is no foundation for the assertion that they are deficient in hardiness; and the wide-spread belief to the contrary has resulted

mainly from the bad effects which inevitably follow long-continued incestuous or in-and-in breeding. That with certain kinds of purely-bred stock this course of breeding has been so extensively practiced as to very greatly impair the vitality of the animals so bred no intelligent, careful observer will deny; while in others, where selection has constantly been made with reference to hardiness, strength and endurance—where close in-breeding has been avoided, and where there has been no unnatural forcing and pampering, the pure races or breeds have no peers in these valuable qualities. The lack of hardiness complained of in purely-bred stock is an accident, due to a peculiar course of breeding or treatment, not justly chargeable to the simple fact that the animal is a purely-bred one, and not necessarily following the course of breeding essential to the creation of pedigreed stock. The thoroughbred race horse, or "blood horse," as he is often called, the purest and best established of all our breeds of domesticated animals, is a pointed illustration of this fact, and the reason is obvious. With the breeder of the race horse vitality has always been a paramount consideration, as upon this depends the ability of the horse to last in a long and closely-contested race; hence a course of breeding that has a tendency to impair the vital forces has never found favor with breeders of these horses. None of the practices that have combined to impair the strength and vigor of purely-bred cattle, sheep, or swine, have been resorted to by them. In-breeding and pampering have both been frowned upon. Selection of the stoutest and best specimens of the breed has been the touchstone of their success. Once in and twice out has been as near an approach to in-breeding as has ever found favor here; hence we find the thoroughbred horse of today the

superior of all the other representatives of the equine race in speed and endurance.

It appears evident that if the laws of heredity are as I have here stated—that is: that the tendency of in-breeding with established races or breeds is to weaken the vital forces, and that cross-breeding gives increased vigor and vitality—we have in this fact a lucid explanation of why the general farmer finds it most profitable to raise grade or cross-bred stock for the dairy or for feeding purposes. The purely-bred races or breeds, as a rule, have been perfected to a wonderful degree in certain qualities; and when the general farmer, desiring to improve his flocks and herds in any of these particulars, procures a purely-bred male to use as a sire, even though such animal may be suffering from some of the bad effects of in-breeding himself, the excellence that characterizes the breed to which he belongs, reinforced and reinvigorated by contact with the current of fresh blood that he meets in the farmer's mixed stock, gives the produce a greatly increased value for everything *except the purposes of reproduction.* All intelligent breeders agree in condemning *close* in-breeding; but they are not agreed as to what *constitutes* close in-breeding. May we not, upon the theory herein advanced, base a rule which will safely govern our practice? With purely-bred stock, or well-established breeds, keep as far from in-breeding as is compatible with uniformity of type and purity of blood. In the formation of a breed from heterogeneous materials use it as the most potent of all agents, without fear of bad results, provided the parents are healthy, vigorous, and well formed, until a considerable degree of uniformity has been reached; bearing in mind the cardinal fact that in proportion as unity of form and

organism is attained, constitutional vigor and fertility is endangered by such a course of breeding. May we not, also, find in this theory an explanation of the well-known fact that in-bred animals which, when coupled with each other are barren, frequently prove fruitful when united with individuals not related or of a different breed?

THE VALUE OF PEDIGREE.

A pedigree is the genealogy of an animal. As usually understood, it consists of the names of the ancestors for a greater or less number of generations. Its value consists not so much in the number of generations through which the ancestry can be traced to some distinguished progenitor as in the *quality* or *character* of the ancestry; and in proportion as we approach the "top" of a pedigree —that is, the immedidate progenitors of a given animal—the more important does the character of the ancestry become.

As has been clearly shown in the preceding pages, it is a well-settled fact in breeding that, as a rule, the longer the line of descent in unbroken succession through ancestors uniformly distinguished for unusual excellence the greater is the probability that that peculiar excellence will be transmitted. Hence, it is evident that the true test of the value of a pedigree is not so much in its length as in the merits of the individuals that compose it. Four or five "top crosses" with animals of rare individual merit make a pedigree of much greater value to the practical breeder than ten, twenty or as many more as you like of animals of no special excellence. The farther back this genealogy of good animals extends, and the more uniform the quality of the ancestry, the better; but the more immediate the ancestry in any given case the more important does its

quality become. Each immediate parent contributes one-half of the blood or pedigree-inheritance of the individual, while each great-grandam or sire contributes one-eighth only; and the farther the removal the more unimportant does any given factor or cross become for good or evil in a pedigree. However desirable it may be to have a record connecting our horses with Flying Childers, Eclipse or Messenger, and our cattle with Hubback or Favorite, at a distance of ten to twenty generations, it is manifestly of far greater importance to know that our own cattle and horses are good, and that their ancestors for the last four or five generations were of surpassing excellence. If our own animals are good, and the top crosses have been uniformly of the same character, we may reasonably expect the progeny to be satisfactory; while, on the contrary, if we have no special merit in the sire and dam, or their immediate ancestors, we may show as many lines as we like to some great ancestor ten or fifteen generations removed, but it will not wipe out the stain of the defective recent crosses.

No pedigree can be a good one that does not usually produce good animals; no pedigree should be prized above other pedigrees unless it usually produces better animals. If, tried by this test, any pedigree fails, no matter how much it may have been idolized, its value is fictitious and its effect is hurtful rather than beneficial. The only true aristocracy of blood is one that brings superior merit; without this it is a delusion and a snare. No matter what it *may have been* eight or ten generations ago, if from a wrong system of breeding, if from a lack of care in selection, if from incestuous breeding, or from any other cause, any particular strain has ceased to be uniformly superior, in itself, it has lost its patent of nobility. Let

all young breeders, and old ones too, for that matter, try "pedigrees," and "families," and "strains" by this test, without being dazed by some imaginary halo that attaches to a name handed down from the misty traditions of the past, and it will be the better for them, no matter what particular line of breeding they may be engaged in.

RELATIVE SIZE OF SIRE AND DAM.

The relative size of sire and dam is a subject upon which much has been written, and upon which I am satisfied there has been much wrong teaching. It is true that nearly all writers upon the subject have laid down the rule that, in coupling, the male should be smaller than the female; but it is also true that very many persons write dogmatically upon subjects concerning which they know but little; and it is further true that writers upon heredity, for years and years past, have done but little more than to repeat each other, accepting what has been said by others as true without question, not knowing or caring to know anything about the facts in the case. I imbibed the doctrine that the male should be smaller than the female from my early reading upon the subject rather than from my own observation, and began writing from this standpoint; but very early in my career as a writer upon stock-breeding my esteemed friend Judge T. C. Jones, of Ohio, from whom I have taken many valuable lessons, called my attention to the manifest unsoundness of this theory, and said that he was fully convinced that the teaching of the books upon this point was all wrong, and that, while he did not advocate great disparity in the size of parents, he was satisfied that when there was a difference it should be the reverse of what the books taught — that the male should, as

a rule, be larger than the female. It was a startling proposition to me, but it set me to thinking and watching the subject closely; and now, looking back over more than thirty years of experience, I say emphatically that Nature's plan, as exemplified in all mammalia, is that the male parent shall be the larger of the two. In all animals, from the horse down to the pig, wild as well as tame, the male, as a rule, is larger than the female of the same breed. No observant man can have failed to notice this. What pure breed or race of animals, in any country, can be named as an exception to this rule? And is not this also true of the human race? How many of my readers are there who can call to mind numerous instances of handsome, well-formed and robust children the offspring of a large father and a small mother! The same result has been observed in hundreds of cases where large draft horses have been coupled with small or medium-sized mares. In fact it is the almost universal testimony of those who have watched closely the result of the cross of the imported draft stallions brought to this country from France and Great Britain, that the very best results have been obtained, not from large, and loosely-made mares, as theorists would have us suppose would be the case, but from those of medium size, compactly made and highly bred.

The excellent results obtained by crossing bulls of the large breeds upon our small, native cows — also the health, vigor and fine form of the lambs got by large Cotswold rams out of small ewes of the Merino breed — all go to prove that this supposed law of Nature is no law at all. In fact, if we study Nature we shall be compelled to admit that her law is just the reverse of what has been claimed; for, with scarcely an exception, through all the stages

of animal life, the males of any given species, race or breed are larger than the females. It is, therefore, safe to assume that the results are more likely to be satisfactory where large males and small females are coupled for breeding purposes than where the reverse is the method practiced.

I would not recommend, neither does it follow as a legitimate deduction from this general law, that *great* extremes of size should be coupled. In fact, Nature has herself interposed many obstacles to prevent such a course of breeding.

There is not, as has often been alleged, any increased danger in parturition from the use of sires larger than the dams. It is the dam that determines the size and growth of the fœtus, and not the sire. Wrong presentations, faulty construction of some parts of the organs of generation or of the pelvic bones of the female, an emaciated or too plethoric condition of the dam at the time of parturition, an unnatural or deformed fœtus, are the usual causes of difficult parturition, and these conditions are brought about independent of the relative size of sire and dam.

It goes for nothing to say that improvement in any breed has resulted from the use of males of a smaller breed upon females of a larger. If one desires to bring about improvement in any direction he must select with a view to that quality, independent of other considerations. Were I desirous of improving the butter-producing quality of the Holstein cow I should use a Jersey bull, notwithstanding the male might be smaller than the female. I would couple large, coarse-wooled ewes with a Merino ram if I desired to increase the density of the fleece; and I would breed large draft mares to thoroughbred or trotting sires if I desired to procure fine

style, better action and greater powers of endurance. But all of this is independent of, and does not conflict with, the general law of relative size, and does not disprove the proposition—that it is Nature's plan that the male should be the larger of the two parents.

INFLUENCE OF FIRST IMPREGNATION.

One of the most interesting as well as one of the most stoutly-disputed questions connected with the business of stock-breeding is this: Does the first impregnation of a female have any influence over the character of the produce from subsequent impregnations? Experienced practical breeders have been arrayed on opposing sides in discussing this question, and each has been ready to maintain his position by illustrations from his own observation. Prof. James Law, of Cornell University, who is one of the most learned and eminent of living veterinarians, and whose reputation as a patient, conscientious, painstaking investigator of problems of this nature is second to that of no man in the world, was requested by me some years ago to prepare an exhaustive article upon this subject. He complied with this request, and the article, which was published at the time in a monthly journal which was then under my charge, I herewith reproduce as the most thorough treatise upon this interteresting subject I have yet seen:

"Physiologists and breeders have long noticed that the influence of the sire is not always confined to his immediate offspring, but that the subsequent progeny of the same female by other males often reproduce in a remarkable manner the personal traits of the first sire and his produce. All quadrupeds show this tendency in a greater or less degree.

"We find the statement made by the immortal Haller: that where a mare had borne a mule by an ass and afterward a foal by a horse, the foal exhibited traces of the ass. The same thing has been noticed by Becker, Haussman, Low, and others. Lord Moreton bred a hybrid between a young chestnut mare (seven-eighths Arabian) and a quagga. The hybrid had the bristly mane, striped body and large head of its sire. One and two years later this mare was covered by a black Arabian horse, and the resulting foals had the erect, short, bristly mane, the dun color, and the stripes on neck, body and limbs of the quagga. A third foal, produced two years later, got by the same Arabian horse, still showed the same marks of the quagga. This case is all the more striking that the mane of the Arab is especially soft and silky and lies flat on the side of the neck, and that the Arabian horse has never been known to show a striped marking of the body. A case entirely similar is recorded by Harvey. A mare of Sir Gore Ouseley's was bred to a zebra, producing a hybrid, and in the two succeeding years was put to two thoroughbred horses, but the foals in both cases were striped and partook of the character of the zebra. In the Royal Stud at Hampton Court a number of mares were bred to the horse Colonel, and the following year to the horse Actæon, but the progeny of the last horse bore unequivocal marks of the horse Colonel, the sire of their half-brothers and sisters. Again, a colt belonging to Earl of Suffield, got by Laurel, strongly resembled the horse Camel by which his dam had had a foal the preceding year.

"McGillivray records the following cases: A polled Angus heifer bore her first calf to a Short-horn bull, and was then served by a black polled Angus bull; but the calf resulting from the last con-

nection approached the Short-horn bull in color and shape, and grew horns. Another polled Angus cow was served by a cross-bred bull (one-fourth polled Angus, three-fourths Short-horn) and bore a cross. Next year, though served by a pure black polled Angus bull, the result was still a cross, as shown by shape and color.

"Dr. Wells, of Grenada, put a flock of white ewes to a chocolate-colored, hairy ram, and the following year to a white ram of their own breed, and yet the lambs got by the last had the fleece more or less of a chocolate hue and largely mixed with hair. Mr. Shaw, of Leochel Cushnie, Aberdeen, divided his flock of black-faced Highland ewes, and had one part served by a Leicester ram and the other by a Southdown. The next year he had all served by a ram of their own race, but the lambs showed the persistent influence of the English rams in their hornless heads and brownish faces. Again, in the following year, they were served by a pure black-faced ram, and there still resulted two hornless lambs, two dun-faced, with very small horns, and three white-faced, with horns quite rudimentary.

"Mr. Giles put a black-and-white Essex sow to a wild boar of a deep chestnut color, and obtained a crossed litter, with the color of the wild boar predominating in several. After the wild boar had been some time dead this sow was put to a black-and-white boar of her own breed and produced a litter of pigs, some of which were distinctly marked with chestnut. A second litter, by a boar of her own breed, again showed the chestnut markings, which had hitherto been unknown in the pure Essex.

"Among dog-fanciers it is a matter of notoriety that an entire litter of pure-bred puppies cannot be expected from a thoroughbred

bitch which has once been lined by a dog of another breed. This was noted by the French poet Jacques Savery as early as the middle of the 17th century, and is confirmed by writers on dogs generally. I will quote but one example from Harvey: A pure Skye terrier, of a dark brown color, with red legs, bore two litters of puppies to a mongrel cur, all of which were colored like the sire—black, with red legs and white feet. On the third occasion she was lined by a pure Skye terrier, of a gray color; and, to avoid accidents, was locked up with this dog during the whole continuance of the heat. The issue was two puppies closely resembling the mongrel cur in color, shape, and general appearance. Instances of the same kind have fallen under the observation of almost every dog-fancier.

"Many have sought to explain the phenomenon as a simple result of the strong impression made upon the mind of the dam by the sire of her earlier offspring; and, doubtless, this may sometimes co-operate, but is altogether inadequate to account for the frequency of the occurrence. The imagination affects the progeny of a very limited number of females, whereas the phenomenon we are considering—among the domestic quadrupeds—is the rule rather than the exception; so that a more satisfactory cause must be sought for.

"McGillivray advances the theory that the elements from the blood of the fœtus, absorbed into that of the mother, *contaminate* her blood, and reduce her to a *cross*, thus rendering her forever after incapable of producing a pure-bred offspring. Not that he supposes the blood of the fœtus, as such, to circulate within the veins of the mother, but that fine particles from the blood of the offspring pass through the intervening layers of cells, and thus reach

the maternal blood and reproduce themselves there. But the whole theory is an assumption. We know that the placenta, or after-birth, by which the fœtus is connected with the mother, serves the purposes of both stomach and lungs. From the glands in the wall of the womb a milk-like liquid is constantly secreted, which, being absorbed by the fœtal vessels branching in the placenta, is carried into the blood of the young animal and serves to nourish it, just as the milk from the udder does after birth. Again, from the blood of the offspring circulating in the placenta carbonic acid is given off and taken into the maternal blood, while oxygen supplied by the blood of the dam is taken up by the blood of the fœtus. So far these membranes fulfill the functions of stomach and lungs to the young animal. But we have no proof of living particles from the blood of the fœtus entering the circulation of the mother, unless we accept as such the very phenomenon we are endeavoring to find an explanation for; and this would only be admissible if no other or more reasonable explanation could be found.

"A slight modification of McGillivray's theory is that of Darwin, advanced in his doctrine of *pangenesis*. He teaches that throughout the blood and system of every animal there are living particles, infinitesimally minute, but with certain plastic or formative powers, by virtue of which they can build up particular forms or produce peculiar characteristics in the animal economy. That such particles may remain dormant for months or years, or even for a number of successive generations of animals, being, meanwhile, transmitted from parent to offspring through the microscopic ovum and spermatozoon, and will only be aroused to activity and growth and build up the forms and beings, like those from which they were derived, when

there occurs a change of circumstances favorable to their development. By this means he explains many cases of apparent 'sports,' or variations from the type of the known ancestors; many sudden advances in excellence, and retrogressions.

"As applied to the phenomenon under consideration it is taught that these infinitesimal particles (gemmules), passing through the membranes from the blood of the fœtus into that of the mother, circulate with it, affecting the ovarium of the female, so that the ovules and offspring subsequently produced by her when impregnated by other males are plainly affected and hybridized by the first male.

"It will be readily conceded that such particles circulating in the blood of the mother will be much less likely to affect her own system, already matured, insusceptible and undergoing the changes of nutrition only, than the growing elements of the ovum or the tissues of the embryo in active process of growth, and with a power of development equal in some cases to the reproduction of an organ accidentally lost. Much, indeed, might be said in favor of the theory; yet, as in its less elaborate form propounded by McGillivray, it is founded on pure assumption and supported by no clear proof. The gradual extinction of the influence of the first male in successive pregnancies by other males is what would scarcely be expected if the blood was charged with gemmules from the first capable of reproducing themselves and especially prone to rapid increase and development in connection with the development of offspring. Again, similar elements must be introduced into the maternal blood when the vital fluid has been transfused into her veins from those of another person or of a beast, and the ovules then in course of devel-

opment in her ovaries must be 'affected and hybridized' if such blood is not exactly identical in composition with her own. But though transfusion of blood into the female system is not uncommon, and though that blood has been repeatedly taken from a person of a widely different race, no complaint has ever been made that the children have been thereby affected.

"A more satisfactory explanation is that advanced by the present writer, in a paper read in 1875, before the American Public Health Association: 'It is a well-known pathological fact that adjacent cells tend to ingraft their plastic or formative powers upon each other. I prick my skin with a needle; immediately the injured cells and nuclei undergo a rapid increase in size and numbers. But the effect does not end there; those adjacent take on a similar action, and the extent of the resulting inflammation is only limited by that of the injury and the susceptibility of the parts. Again, in placing a slice of scarf skin in the middle of a raw sore we inoculate the cells of the adjoining granulations and empower them to develop scarf skin. How, then, can we avoid the conclusion that the impregnated ovum impresses its own characters on the mass of the decidua, and through this on the maternal mucous membrane, and that this in its turn impresses its character on the membrane and embryo of the next succeeding conception?'

"It has been opposed to the theory of *contamination of the mother's blood*, that in the case of woman the father of the first child rarely affects the appearance of those by other fathers. Mr. Allen has known instances in which white women had their first children by negroes, and afterward marrying white men had children as purely white as those of their neighbors. Instances in which an

opposite result has ensued he attributes to the effect of imagination. Now, the theory I offer will perfectly explain the infrequency of the occurrence in the human subject, as compared with the lower animals. In the mare the connection of the after-birth with the womb takes place over the entire surface of the latter. The points of intimate attachment, therefore, in successive pregnancies, are the same. In the cow and ewe the womb is studded with button-like processes, to the number of fifty or sixty, containing the uterine gland, and forming the points of attachment for the fœtal membranes in all pregnancies alike. In the sow the fœtal membranes of each pig are attached to the whole adjacent uterine mucous membrane, as in the mare. Lastly, in the bitch each fœtal membrane has a broad, circular, villous belt embracing almost its entire surface, and connecting it with the mucous membrane of the womb. In all of these animals the fœtal membranes are connected with the same parts of the uterus in each successive pregnancy, so that the ingrafting or inoculation between membranes and womb, and between womb and membranes and fœtus, cannot fail to take place. It must be borne in mind that these membranes are outgrowths from the ovum or embryo, and thus, through the male and female generative elements, partake of the nature of both sire and dam. In other words, like the young animal, the product of conceptions of which they are a dependency, the membranes have been produced by the union of the male and female elements; and where they lie in direct contact with the womb, separated only by a thin layer of cells in part produced by the womb and in part by the membrane, an inoculating, ingrafting or modifying action is effected by the one on the other. In woman the arrangement of the fœtal membranes

is altogether different. Their intimate connection with the walls of the womb is confined to one circumscribed portion of the surface of each; and as the point of attachment can hardly fail to be different in successive pregnancies the chances of a former child influencing the characters of the next are correspondingly reduced. Yet it is evident that this may occur, and, as a matter of fact, we find cases in which the bearing of a mulatto by a white woman has affected the appearance of some of her later children by a white man. But such a result is very exceptional in the human family, and this is precisely what is to be expected if our explanation of its cause is the right one.

"It has been objected that a similar phenomenon has been observed in pigeons, and that in them this law of cell-inoculation could not take place. But this is, manifestly, a mistake. The eggs of birds are impregnated even as high up as the ovary. Says Owen: 'In *coitu* spermatozoa enter the cloaca and penetrate the oviduct, ascending to the ovarium.' The impregnated egg goes on enlarging by subdivision of its cells in the ovary and upper end of the oviduct, and, being as yet destitute of shell, its cellular structure is in direct contact with the maternal tissues. There is, therefore, a similar opportunity for cell-inoculation as in the mammal, although more limited in duration.

"But our manner of viewing this subject is still further supported by a series of phenomena observed in hybridized flowers. Darwin quotes instances from Wiegmann, Gartner, Berkley, and others, to show that where the flowers of the white pea had been fertilized by pollen of the blue pea the resulting pods contained a mixture of blue and white peas. And this coloration was not con-

fined to the cotyledons of the seed (the true embryo), but extended to the skin as well. More remarkable still: Mr. Laxton, of Stamford, 'fertilized the tall sugar pea, which bears very thin, green pods, becoming purplish-brown when dry, with pollen of the purple-podded pea, which, as its name expresses, has dark, purple pods with thick skin, becoming pale, reddish-purple when dry.'

"Mr. Laxton has 'cultivated the tall sugar pea during twenty years, and has never seen or heard of its producing a purple pod; nevertheless, a flower fertilized by pollen from the purple pod yielded a pod clouded with purplish-red, which Mr. Laxton kindly gave to me. A space of about two inches in length, near the extremity of the pod, and a smaller space near the stalk were thus colored. On comparing the color with that of the purple pod, both pods having been first dried and then soaked with water, it was found to be identically the same; and in both the color was confined to the skin lying immediately beneath the outer skin of the pod.'

"Some of the peas were also clouded with purple, whereas the tall sugar pea is a pale, greenish-brown — never purple. Darwin collects a number of other instances in which the fruit or seed capsule was affected by fertilization with strange pollen, in the cases of stocks, palms, oranges, lemons, cucumbers, maize, daffodills, rhododendrons, cress, and apples. Perhaps the latter furnish the most important examples. The fruit here consists of the lower part of the calyx and of the upper part of the flower peduncle in a metamorphosed condition, so that the effort of the foreign pollen has extended even beyond the limits of the ovarium. Cases of apples thus affected were recorded by Bradley in the early part of the last century; and other cases are given in old volumes of the 'Philo-

sophical Transactions.' In one of these a russeting apple and an adjoining kind mutually affected each other's fruits; and in another case a smooth apple affected a rough-coated kind. Another instance has been given of two very different apple trees growing close to each other which bore fruit resembling each other, but only on the adjoining branches. It is, however, almost superfluous to adduce these or other cases after that of the St. Valery apple, which, from the abortion of the stamens, does not produce pollen, but, being annually fertilized by the girls of the neighborhood with pollen of many kinds, bears fruit differing from each other in size, flavor and color, but resembling in character the hermaphrodite kinds by which they have been fertilized.

"Mr. Darwin evidently sees that his system would demand that the gemmules from the strange pollen should serve to fertilize or modify other and distant flowers and buds then being formed on the same tree, for he remarks: 'There is not the least reason to believe that a branch which has borne seed or fruit directly modified by foreign pollen is itself affected so as subsequently to produce modified buds; such an occurrence, from the temporary connection of the flower with the stem, would be hardly possible.'

"Yet if the gemmules were given off by the pollen it would be quite reasonable to expect such to be carried on with the descending sap, and to modify the buds then in process of formation, as they are represented to do the ovules in the female ovary. But, as in the case of the blood, so in that of the vegetable sap—we have no evidence that it contains particles possessed of plastic powers equal to the development of tissue. This is effected only be the nuclei or cells present in the substance of the tissues them-

selves; and as these nuclei communicate or are continuous with each other through minute branching processes, they easily affect those immediately adjacent, but have comparatively no influence upon those that are somewhat remote. The modification, therefore, of the fruit capsule, pod, fleshy drupe, and fruit stalk surrounding the seed, is only what is to be expected from the contact of the male pollen with the cells of the female flower, and of these in their turn with those adjacent, while all other parts of the plant are entirely unaffected by the act. In the animal the process is identical in every respect; the continuous cells—maternal and fœtal—rendered continuous or placed in direct opposition to each other through their minute branching processes, mutually influence the vital processes and formative powers of each other; and thus it comes that the nuclei of the womb, but one step removed from its contained embryo, acquire certain new characters from it, and in due time transmit these to later progeny. The efficiency of this new inoculating process will, of course, be greatest where the vascular connection is the most intimate; and, as we have seen, the effect on the progeny is most patent when these points of intimate vascular connection between mother and offspring are the same in successive pregnancies.

"A correct view of this subject is of more practical importance than may at first sight appear, for although the animal modified by the influence of the sire of an elder half-brother is necessarily a cross, whatever the mode of exerting such influence, an important question may arise regarding the purity of other offspring that bear no evidence of having been subjected to such modifying cause. If Mr. Darwin's theory is correct, that the whole blood of the mother

is charged with gemmules from the embryo, which gemmules pass into all future ova, then all future offspring are essentially crosses, as will appear in their progeny, even if they themselves show no sign of modification. But, on the other hand, if the result is only due to the mutual influence of adjacent cells in the womb and fœtal membranes, as vegetable as well as animal physiology seems to imply, then the general system of the dam is unaffected, and her progeny, which have personally escaped such influence and show none of the modified characters, may be held to be of pure lineage, and may be bred from without fear of degraded offspring."

While there are many instances in history which go to confirm this theory, as presented by Prof. Law, yet I am inclined to the opinion, from long years of close observation, that the cases where the first impregnation of mammals affects the subsequent progeny are so rare as to make it practically of but little account in the calculation of the breeder. Indeed the instances where such resemblances are noticed in horses, cattle, sheep, and swine are so few and obscure as to lead me rather to the conclusion that they are accidental, or owing to an inherited similarity in the remote ancestry, rather than to some occult influence exercised by a first impregnation. The case of Lord Moreton's mare and the quagga foal has been pressed into service by every man who has written upon this subject within the last half century, and yet it proves nothing. The black stripe is a distinguishing mark that belonged to the feral dun horses in general, and which to this day occasionally crops out in *all* breeds of horses. And if the influence were as potent as some writers have claimed, especially when applied to the breeding of horses, it is time some more modern case might be cited. Hundreds

upon hundreds of excellent mares, many of them Thoroughbreds, in Kentucky and Tennessee, have produced their first foals to a jack and have afterward produced beautiful offspring from highly-bred sires. I can recall many illustrations upon this point that have come under my own observation. In fact the whole theory of gestation, the manner in which the fœtus is attached to and nourished by the womb of the female, seems to make the commingling of the blood of the latter with that of the former an impossibility. In the case of the bitch, however, there appears to be a marked difference from all other domestic animals in the manner in which the placenta is attached to the womb—as is very clearly shown by Prof. Law in the foregoing article—and here alone, among domestic animals, do we find any considerable number of results which tend to confirm the theory that a first impregnation affects subsequent ones. It is noticed so frequently, however, here, that dog-fanciers almost universally recognize it as a rule, and exercise the greatest possible care lest a bitch should first be lined by a mongrel or a dog of some other breed. But aside from this single exception I do not think the cases are sufficiently well authenticated or sufficiently numerous to justify the practical breeder in paying any special attention to it, especially when to do so would require a departure from plans that would otherwise be followed.

EFFECT OF IMAGINATION UPON THE COLOR OF PROGENY.

The question has frequently been asked, Does a sudden fright, or any peculiarity of association in a pregnant animal, have any effect upon the color or markings of the progeny? and the answer given has sometimes been "yes" and sometimes "no." In fact *both*

sides of the question have been stoutly maintained by intelligent gentlemen who have claimed to speak from extensive personal observation and experience. Ever since the day when Moses wrote the account of the method employed by Jacob to over-reach his father-in-law in the division of his cattle (see Genesis, chap. XXX), there have been those who believed it possible, through a strong mental impression, to affect the color and otherwise mark the offspring; and ever since the day when I, then in my early boyhood, first read the account of Jacob's success in breeding cattle that were "ring-streaked, speckled, and spotted," I have been on the lookout for evidence bearing upon the old patriarch's theory.

The result of these observations has been to confirm me in the belief that while color, as well as all other peculiarities, *usually* follows the ordinary laws of heredity, it is nevertheless true that strong mental impressions do *sometimes* set aside the ordinary laws of Nature and produce surprising results. One very clearly defined case came under my observation when a lad on my father's farm. A flock of sheep had been bred upon this farm, without any infusion of fresh blood, for many years. Not a black sheep, nor one with a black spot or mottled face, had ever been known among them. On one occasion, after most of the ewes had been bred, a black ram was turned into a small lot with them. Had a strange dog, a wolf, or any other wild animal, been suddenly let down among them they could not have been more terribly frightened. They circled round and round the lot, and made the most frantic efforts to escape from the supposed monster, while he kept turning round and round in the center of the circle, in vain trying to approach the ewes, that seemed almost ready to die with fright. This was kept up

until from sheer exhaustion the ewes began to slacken their pace; but it was a long time before the flock became reconciled to the presence of the stranger. The result was striking. *Every ewe that was pregnant at the time of this fright dropped offspring more or less marked with black*, while *some* of those that were served by this ram a few weeks later, after they had become accustomed to his presence, dropped lambs that were pure white. The case attracted much attention at the time, and has often been referred to since as a convincing illustration of color-marking from severe fright.

Other instances have come under my observation; none of them so convincing as the one above narrated, but showing unmistakably the effect of imagination or association. I once knew a gray mare that was bred to the same gray Percheron horse for four years in succession, and produced four foals. During her first impregnation she had for a stable companion and working-mate a bay mare, and the foal was a bay. The next year her mate was a chestnut and the foal was a chestnut. Afterward she was worked and kept with several different animals, of various colors, and her foals were all grays, like herself and the sire.

These cases, with many others of a similar character that have come under my own observation, as well as hundreds that have been noted by others and reported to me, have confirmed me in the belief that "markings" do *sometimes* occur from strong mental impressions; but the precise conditions under which this phenomenon takes place are unknown. The effect is so uncertain that, practically, it may be entirely ignored by the breeder with impunity, until some modern Jacob shall arise who can tell us just how and when to use the "peeled rods."

EFFECT OF CHANGE OF CLIMATE ON THE GENERATIVE ORGANS.

It has often been remarked that a change of climate appears at times to have a serious effect upon the organs of reproduction, especially those of the male. A well-informed writer in an English journal not long since stated that experience had taught him that no water-fowl will breed the same year that its home is changed, referring, I presume by the context, to a material change as to distance or climatic conditions. I have noticed the same result with quadrupeds, more especially with horses imported to America from France, England, and Scotland. Several horses that, within my knowledge, have totally or partially failed to get foals for a year or two after importation, have, after becoming thoroughly acclimated, proved themselves very sure foal-getters. I have also had many cases of a similar nature reported to me concerning bulls of the various breeds, and a still greater number, perhaps, of rams and boars.

It is quite reasonable to suppose that a material change in climate, or even in the mode of feeding, may so derange the organs of reproduction as to cause partial or total loss of sexual power. We know that a change in climate, or even in food, or water, often completely upsets a race horse; and that they are never considered fit to do themselves credit upon the turf when taken from this country to England, and *vice versa*, short of a year's acclimatization. It is not strange, therefore, that the effect should be equally as marked upon the generative organs as upon the motor apparatus, and upon cattle, sheep, and swine as upon horses. Breeders, therefore, should not be in too great haste to declare an animal a

non-breeder under such circumstances. Ample time should be given for thorough acclimatization in all cases of this nature.

CONTROLLING THE SEX.

It has been said that there is nothing new under the sun, and that each succeeding generation spends most of its time in shoveling over the same earth that has been examined in vain by its predecessors in search of hidden treasures. Theories that have been advanced, investigated and abandoned come up again year after year to be discussed, investigated and again cast aside as unreliable. They appear periodically; and the lapse of a decade is sufficient to pass in review, through the agricultural press, the whole brood upon any given subject bearing upon agriculture. That of controlling the sex of offspring has, ever since the days of Aristotle, been one of the most fruitful topics of discussion, and the various theories that have been advanced appear and reappear with perennial vigor. These theories may be briefly summarized as follows:

1st. A strong mental impression on the part of the parents, but especially of the mother, at the time of conception, will determine the offspring.

2d. The concentration of the attention of the dam on her peculiarly feminine qualities at the time of sexual union will secure female progeny.

3d. If the amorous desires of the male are stronger than those of the female the progeny will be a female, and *vice versa*.

4th. The development of the fœtus in the right side (horn) of the womb will secure a male, and in the left side a female.

5th. The point of origin of the artery of the testicle from the main abdominal trunk (aorta) will determine the sex of the majority

of the offspring, the male sex predominating in proportion as the origin is more anterior.

6th. The male germ is supplied by the right testicle or ovary, and the female by the left.

7th. The excitation of one side or the other of the system of the male at the time of coition will determine the sex of the young.

8th. The persistent selection for breeding purposes of females which yield one sex mainly, and of males from females of the same kind, will finally secure a race producing a great excess of the sex in question.

9th. In uniparous animals every successive ovum that reaches maturation is of the opposite sex from that which immediately preceded it. Hence, by serving on the second occurrence of heat we may secure the same sex as in the last fœtus.

10th. The stage of development attained by the ovum at the period of impregnation determines the sex of the product of fecundation, the less developed proving females, the more mature males.

11th. The personal preponderance in strength and vigor of the one parent will determine an excess of its own sex in the progeny.

12th. The nature of the food of the parents, and particularly of the mother before conception, will influence the production of the different sexes.

The theory that just now appears to be more generally believed in than any other is the 9th in the foregoing list. This is based on the belief that, naturally, animals which usually bring forth but one at a birth will produce the sexes alternately—that if the first ovum produces a male, the next ovum, if impregnated, will produce a female; consequently, if a cow or mare, after having produced a female, is impregnated at the first period of heat thereafter, the produce will be a male. If female produce only is desired, one

period of heat should elapse after the birth of a female before the dam is again served by the male. This is what has been known as the Stuyvesant theory, and many cattle-breeders of my acquaintance firmly believe that it can be relied upon in a majority of case.

Several other theories have been advanced, but the foregoing includes the principal ones. It may be that several of these causes have an influence in determining the sex, but it is quite certain that some of them, notably the 4th, 6th, and 7th, can have no influence whatever, and that none of them can be depended upon. Nature seems to have wisely provided, in order to preserve an equilibrium in the sexes, that their determination should be placed beyond the control of any single cause. It is known that some males get a large preponderance of one sex or the other, and some females will produce one sex only; sometimes for a series of years the observation of one man will tend to confirm a certain theory of sex production, while in other hands the same theory will utterly fail. Taking up at random Part I of Vol. V of the English Short-horn Herd Book I find recorded not less than thirteen cows that have produced five calves or over, the entire produce being of one sex. In two of these cases three different bulls were used, in eight cases four different bulls, and in two instances six different bulls. Some very remarkable instances are found: The cow Ann by Abraham (2905) dropped nine bull calves in succession, the last two by Belshazzar (1703), and then her tenth calf, also by Belshazzar, was a heifer. Dorothy by Fisby (1040) dropped six bull calves in succession by four different sires, the fourth and sixth being by Roman (2561), but the seventh, by the same bull, was a heifer. Her eighth calf was also a heifer. Down Horn by Budget (1759) began with

a heifer; her next was a bull by the same sire as the first, and she then dropped five more bull calves in succession by as many different sires. Fair Helen by Young Albion (15) began with a bull calf, and then went on with five cow calves in succession by four different bulls. Florence by Lindrick (1170) began with a heifer, then a bull, then six heifers by six different sires, and then two bulls, also by different sires.

With mares the same law doubtless applies. Turning to the Stud Book I find that the thoroughbred mare Rosemary produced two males from two different sires; next she produced three females, two of them by the same horse that got the males; then another male, and then eleven females in succession from nine different sires. Scythia produced six females, and no males, from three different sires. Another mare by Scythian, recorded on the same page, produced four males in successive years from as many different sires; and still another on that page, also by Scythian, produced four females by as many sires. Ærolite produced six males to successive covers of imp. Australian; while Dolly Carter, bred to the same horse, produced nothing but females. Mary Lewis began with two male foals, the second being by Glencoe; her next foal, also by Glencoe, was a filly; and all her foals after that (six more), by four other sires, were females. Olivia produced seven males in succession from four different sires before she dropped her first filly. Neither Jack Malone, Muggins, John Morgan, nor Bonnie Scotland could get anything but fillies out of Lantana. Mollie Hambleton produced six fillies in succession, three of them by Planet, and then she faced about and threw two male foals to Planet. In short the pages of the stud books and herd books furnish a com-

plete refutation to any rule that has yet been formulated upon this subject.

It may be that we shall ultimately discover the circumstances under which these various causes operate upon each other, so that we shall be able, in many cases, to produce a given sex at will, but at present we know but little if any more upon the subject than was known to our grandfathers.

CHAPTER II.

THOROUGHBRED HORSES.

The breed of horses generally known as the Thoroughbred is the oldest and best established of all the breeds of horses of Europe and America. The term Thoroughbred, often used in America, but seldom in England, as a synonym for well-bred or purely-bred, was originally used exclusively as the name by which this breed, otherwise designated as the English race horse, was known. The same horses are sometimes denominated "blood horses," from the well-established purity of their lineage.

The Thoroughbred horse is peculiarly a British production. At a very early period the attention of the rulers of Great Britain was earnestly directed to the work of improving the breeds of horses of that kingdom. These horses were notoriously deficient in size, and the earliest efforts were directed toward improvement in that particular by the importation of heavy horses from Normandy, Flanders, and Germany. It would be interesting to trace, step by step, these efforts, but our space will not admit of such detail. The era of improvement commenced with the conquest of the islands by the Saxons; but it was many years before there appears to have been any clearly-defined or well-settled purpose, the object at one time appearing to be an increase of size by large importa-

tions of the heavy horses of Flanders, and again, to give gracefulness of motion and beauty of form by the introduction of what is known as Oriental blood—that of the Arab, the Turk, and the Barb. It is evident that from a very early period the blood of the Barb and of the Turk was held in higher esteem than that of the Arab, the latter being regarded as undersized, and to be esteemed rather for beauty of form and gracefulness of action than on account of any real superiority.

For several years preceding the reign of Charles II, horse-racing appears to have been rapidly growing into favor as an amusement and recreation among the English people; and from that time until the present contests for supremacy upon the turf have stirred the British heart as no other amusement has ever done. To the constant growth and great popularity of this sport, which for nearly two hundred years has been regarded as the national amusement of that country, are we indebted for persistence in a course of breeding which has given us this race of horses so pre-eminently distinguished throughout the world for speed and endurance upon the race-course; and which, on account of the great care taken in their breeding, and their consequent purity of lineage, were the first race of animals to which the term *thoroughbred* was applied.

The foundation upon which this now well-established breed was built was a promiscuous mingling of the native horses of the Island of Great Britain—first with the larger races of Europe, especially of Normandy, Flanders, and Germany, and subsequently with the lighter, more agile and graceful horses of Spain, which were themselves almost identical with the Barbs on the other side of the Mediterranean. Frequent importations were also made direct from

Egypt, Morocco, and Tunis, and likewise from Arabia and various parts of Turkey, until this Oriental blood, to a considerable extent, permeated all the horse stock of Great Britain, excepting those bred especially for agricultural purposes. So thoroughly had the passion for turf sports, or horse-racing, taken possession of the English people as early as the reign of Charles II, that ability to run and win in a race was even then regarded as the principal test of merit in horses, and those most successful on the turf were most highly prized for breeding purposes. From that time down to the present, embracing a period of more than two hundred years, the selection of breeding stock has been constantly made with this as the primary object.

With the advent of Charles II, in the last half of the seventeenth century, breeding for speed and endurance upon the race-course began to be conducted on something like a definite plan; the records of turf performances were carefully kept, especial attention was paid to the pedigrees of horses designed for the turf; and an aristocracy of blood came to be recognized in the horses of England. This monarch sent his "master of the horse" to the Levant for the purpose of procuring horses for breeding purposes, with which he proposed to found a breeding stud. His purchase comprised three very famous Turkish stallions and some mares that, in the equine literature of the day, were called the "royal mares," and these royal mares are by many supposed to be the foundation of the strict Thoroughbred. This origin is, however, more mythical than real, as it was well known that several other mares were, from time to time, introduced from the Orient, and that the produce of many mares not descended from nor related to

these royal mares have been distinguished upon the turf and recognized as Thoroughbreds.

About the middle of the eighteenth century the publication of the English Racing Calendar was commenced. In this the names of all the horses that participated in the regular races were published, and in a very few years it became the custom to give also the name of the sire in each case. This publication has been continued, with very little change in form or matter, down to the present day, and the records of performances and names of performers therein contained furnished the basis for the stud book. A collection embracing all the pedigrees of distinguished horses that could be obtained was published as early as 1786. Subsequent to this several attempts at a compilation of pedigrees from the Racing Calendar and other sources was made, but it was not until 1791 that the English Stud Book took its present form.

The standard of admission to the first volume of the Stud Book appears to have been simply creditable performance upon the turf, as shown by the Racing Calendar, it being taken for granted that no horse could be a creditable performer that was not well bred—an assumption that has never yet been found at fault. The first volume compiled upon this basis has furnished the foundation for all subsequent ones, and few names have been admited to registry that do not trace, without admixture, on both sides, to an ancestry that is recorded in the first volume, or to subsequent importations of Oriental blood.

It is the general opinion of the best-informed English turfmen that the Oriental stallions which contributed most largely to the formation of the English Thoroughbred were Place's White Turk,

the Byerly Turk, Lister's, or the Straddling Turk, the Darley Arabian, Curwen's Barb, Lord Carlisle's Turk, the Godolphin Arabian (a Barb), the Leeds Arabian, Honeywood's White Arabian, Combe's Gray Arabian, Bell's Gray Arabian, D'Arcy's Turk, Selaby Turk, the Ancaster Turk, Compton's Barb, the Toulouse Barb, Stanyan's Arabian, Lowther Barb, Taffolet Barb, Hutton's Gray Barb, Honeywood's Arab, Sedley Barb, and Wellesley's Arabian. Of those above mentioned Lister's Turk got Brisk and Snake, Darley Arabian got Flying Childers, Carlisle's Turk got the Bald Galloway, and Godolphin Arabian got Blank, Regulus, and Cade. The "Royal Mares" were imported Barbs.

Of these Oriental sires it is generally admitted that the Godolphin Arabian—imported in the year 1728—is the last that has proven of any special benefit to the English stock; and while this blending of the blood of the Orient with the old races of England furnished the foundation, there cannot be the slightest doubt that the care and skill of English breeders in selecting and coupling with the stoutest, best and fleetest for successive generations has been a more potent agent in the formation of the breed, as it now exists, than the Arabian and Barb blood, to which tradition has ascribed its superiority. Many importations of the choicest blood of the Orient have been made both to this country and England within the last half century, and yet scarcely a name among them can be found in the pedigree of a horse that has distinguished himself upon the turf. The Arabian horses possess undoubted beauty of form and grace of motion, but they are notoriously inferior in point of size to the average Thoroughbred, being rarely over 14 hands high; and their produce from the best of mares have been failures both

in the stud and on the race-course. In every instance in which the speed and stoutness of our Thoroughbreds have been tested side by side with the Arabian they have proven superior to their eastern competitors. Hence, recent crosses of Oriental blood, while they do not warrant exclusion from the stud book, are not looked upon with favor by the best breeders of England or America. The Thoroughbred of today is greatly superior to his Oriental ancestor in size, speed, endurance, and every other useful quality, excepting, possibly, that of docility.

The greater portion of Arabia is, in point of fact, illy adapted to the rearing of horses, and prior to the days of Mahomet horses were scarcely recognized as a part of the possessions of the Arab, their riches consisting chiefly in camels, oxen, sheep, and goats. But Mahomet was an enthusiastic lover of the horse, and while he succeeded in ingrafting upon so large a proportion of the inhabitants of the eastern world his own peculiar religious tenets he also imbued his followers with a great degree of his enthusiastic admiration for the horse. Indeed, kindness to and love for this noble animal was made a part of the religious duty of all true Mussulmans, and from the days of Mahomet down to the present time the Arabian has held his stud, and especially his mares, in a sort of superstitious reverence. Mahomet selected for himself a magnificent stud, and his followers to this day seek to trace the genealogy of their choicest horses to the mares that were his favorites. But their pedigrees, divested of all the high-sounding flourishes with which they are accompanied, mean but little and are altogether unreliable. Arabia was one of the latest of the Oriental countries to engage in rearing horses; and there can be but little question that the enthusiasm of

the followers of the Prophet had very nearly if not quite as much to do in creating the great reputation that the Arabian horses soon thereafter attained, and which they hold to this day, as the quality of the animals themselves.

The Thoroughbred having been for so many generations bred with especial reference to his capacity as a *race* horse, it is not surprising that he should have acquired peculiarities of form and temper that render him undesirable for the more sober and steady uses of every-day life. He has been bred to *run*, and the form best adapted to speed and the mental qualities that most certainly insure the pluck, and energy, and determination, so essential to success in a hard-fought race, have been the qualities aimed at by breeders and the standard by which selections have been made. Such a course of breeding has made the Thoroughbred, as a racer, rather too lithe and light in form, and too nervous and excitable in temper for ordinary business uses; but in speed, endurance and resolution they surpass all other breeds, and there is scarcely a race of horses in existence but may be improved by a cross with them. This fact is almost universally recognized, and nearly all countries upon the civilized globe have for many years regarded the English Thoroughbred, or "blood horse," as the basis of all substantial equine improvement.

Our American horses are largely permeated with the blood of the English Thoroughbred. Many of the best stallions and mares of England have been imported to this country, and their influence is seen on every hand. It enters largely into the ground-work of all our trotting strains, and it is doubtful if a single great road horse or trotter has been produced in this country that did not possess a

large share of this royal blood as a foundation upon which the trotting superstructure has been built.

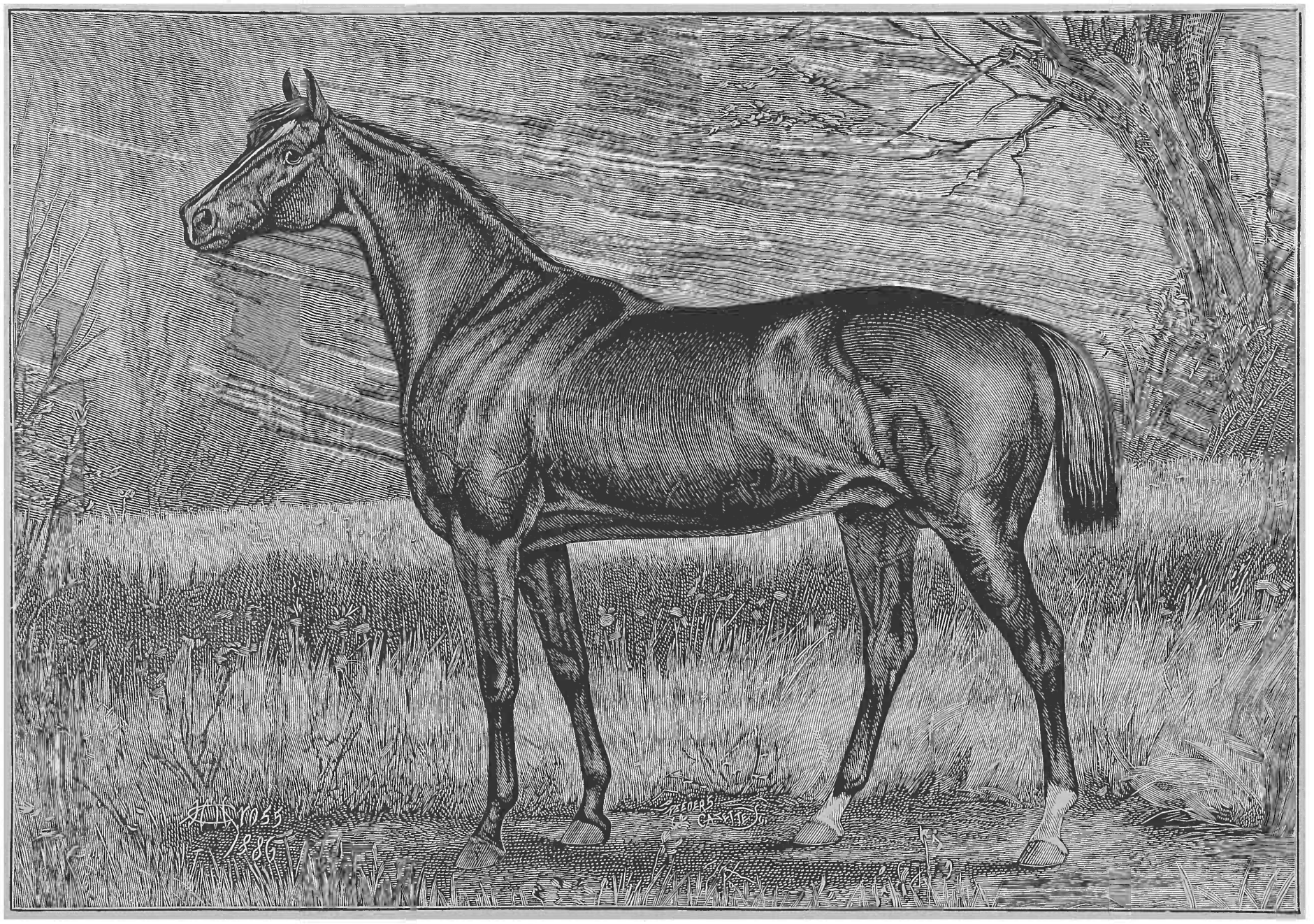
There exists great ignorance, even among many who pass for intelligent, well-informed horsemen, as to what constitutes a Thoroughbred horse. Nearly every agricultural society in the land has a class in its premium list for Thoroughbred horses; and yet many of the managers of these societies have a very indefinite idea as to what is requisite to render a horse eligible in this class. Questions of this nature are referred to me almost every year for a decision as to eligibility; and many of these are of such a nature that a very slight knowledge of the subject ought to enable the officers of these societies to decide for themselves. On this account I beg pardon of the well-informed reader while I briefly recapitulate.

In the first place, it should be understood that we derive the term, as well as the breed of horses to which it applies, from our British cousins across the water, as has been fully set forth in the preceding pages; and that the word, when applied to horses, is used to designate one particular breed, and that is the running horse. All our American Thoroughbreds are, therefore, imported from England, or are descendants of animals so imported. A recent cross with an imported Arabian or Barb, while it does not vitiate the blood nor render an animal ineligible as a Thoroughbred, is not usually regarded as desirable, from the fact that the course of selection which has been practiced by the breeders of Thoroughbred horses in England and America for the last hundred years has given us a race that is generally considered to be far superior to the Oriental horse of today in speed, size and stoutness. The compiler of the stud book for Thoroughbred horses in this country has

relaxed the English rule somewhat, and admits to registry animals that show an unmixed descent for five generations of pure blood; and while, under this rule, many animals may be admitted that are not, in the strict sense of the word, Thoroughbreds, yet if for five generations nothing but Thoroughbred sires are to be found in the pedigree, the quantity of alien blood remaining must necessarily be infinitesimally small; and by usage the animal so bred is in this country ranked as a Thoroughbred. The American Stud Book for Thoroughbred horses, five volumes of which have been issued, is edited and published by Col. S. D. Bruce, of the *Turf, Field and Farm*, New York.

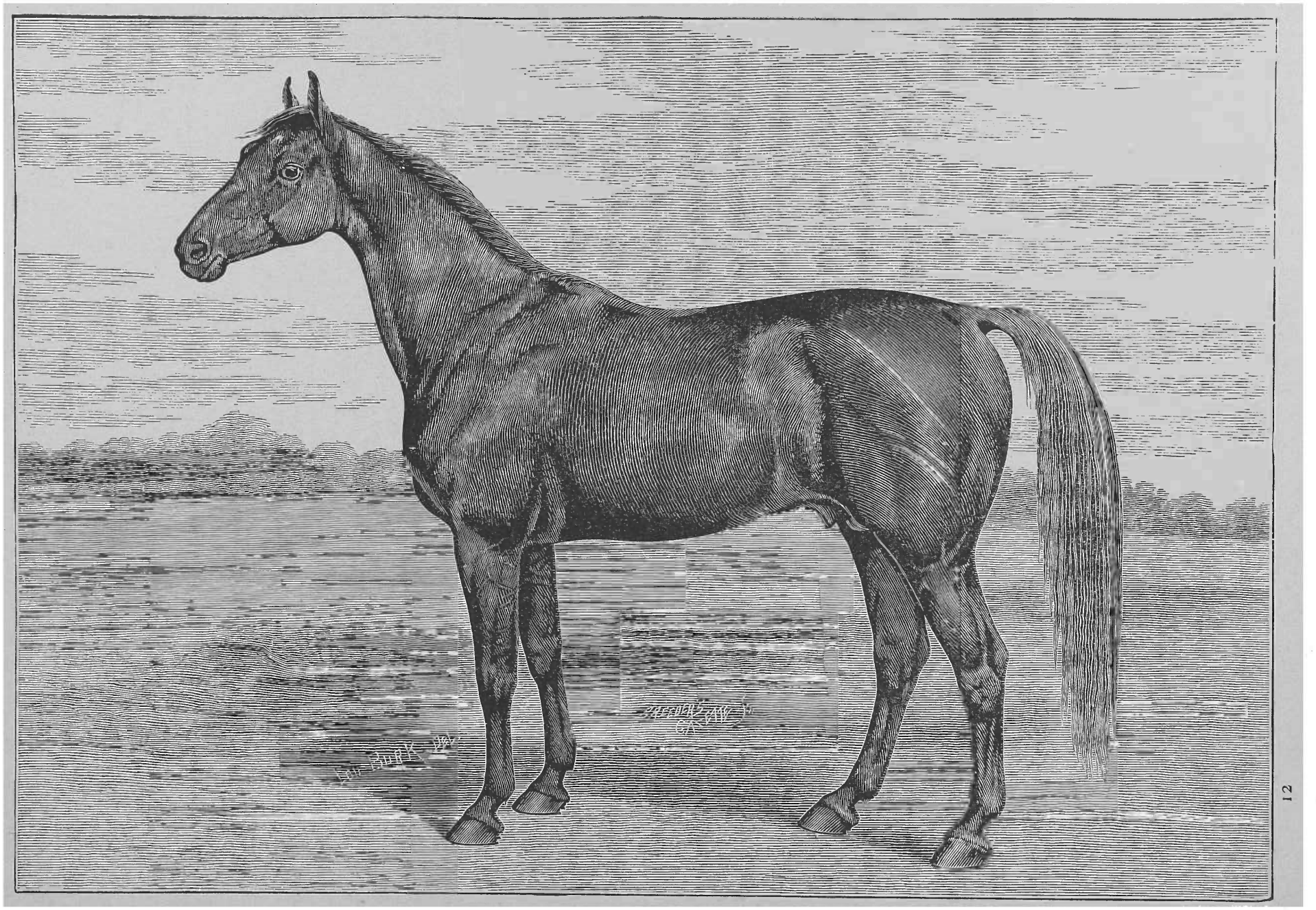
THOROUGHBRED STALLION LEONATUS.

Color, bay; foaled 1880; got by Longfellow, dam Semper Felix by imp. Phaeton; 2d dam Crucifix by Lexington. Bred by J. H. Millar, Lexington, Ky.; owned by Chinn & Morgan, Harrodsburg, Ky. Engraved from a sketch from life by Cross, showing the horse at six years old. At three years old Leonatus was confessedly the greatest race horse of the year, and was never headed until he broke down, as the result of an accident, near the close of the racing season of 1883.



THOROUGHBRED STALLION HYDER ALI.

Color, bay; foaled 1872; got by Leamington, dam Lady Duke by Lexington; 2d dam Magdalen by Medoc. Bred by A. Welsh, Philadelphia; owned by Gen. Richard Rowett, Carlinville, Ill. Engraved from a sketch from life by Burk, showing the horse at fourteen years old. The blood lines represented in this horse are among the most desirable of the breed; the first two sires named, Leamington and Lexington, being by common consent recognized as among the most famous Thoroughbred horses ever owned in America.



CHAPTER III.

TROTTING AND ROADSTER HORSES.

We have as yet no really distinctive breed of driving horses or roadsters. The horses used for light driving, fast trotting, etc., are largely a conglomeration of all breeds and types. Some approximate the French Canadian pony in form and action, while others possess most of the characteristics of the Thoroughbred; but so popular have trotting races become in this country, and so universal is the fancy for fast driving horses, that at almost all our horse shows and fairs the roadster class will be found more largely represented than any other, and usually more largely than all others combined. Indeed the roadster is more distinctly an American feature than any other in our equine product; and we are fast approaching the time when the American trotting horse may properly be classed as a distinct breed. It is the realization of an American fancy—the result of a fashion that has demanded the fastest and stoutest trotting horses in the world for driving on the road; and to this end we have selected and bred until our horses surpass all others in this particular. Among these horses we have several recognized families of especial prominence, all more or less related, each possessing features that are to some extent peculiarly its own, but none of them entitled to be separately classed as a breed.

Of these we may mention the *Hambletonians*, descended on the paternal side from imp. Messenger (a Thoroughbred) through his son Mambrino (also a Thoroughbred), and Mambrino's son Abdallah, out of a mare of unknown blood, who in turn got Rysdyk's Hambletonian, out of a mare by Bellfounder (an imported Norfolk trotter), and his second dam probably having two crosses to imported Messenger. Through Rysdyk's Hambletonian, on the paternal side, we have the Volunteers, the Edward Everetts, the Alexander's Abdallahs, the Almonts, the Messenger Durocs, the Sentinels, the Happy Mediums, the George Wilkeses, the Dictators, and all the various so-called Hambletonians of the present day. This celebrated horse was bred in Orange Co., N. Y., foaled in 1849, and was kept in that county until his death, which occurred March 26, 1876.

Then we have the *Mambrinos*, that take their name from Mambrino Chief, who was got by Mambrino Paymaster, a son of the Mambrino above referred to as the grandsire of Rysdyk's Hambletonian. The dam of Mambrino Chief, like the dam of Abdallah, was a mare of unknown blood. He was bred in Orange Co., N. Y., foaled in 1844, and when ten years old was taken to Kentucky, where he died in 1861. Upon the highly-bred and Thoroughbred mares of that region he was very successful as a sire of fast trotters, and the mares got by him have been especially noted as producers of great trotters when coupled with other trotting strains.

The *Clays* constitute another trotting family of note. The original Henry Clay was a famous trotting stallion, foaled 1837, got by Andrew Jackson (also a famous trotter), who was a grandson of Bashaw (an imported Barb), and related to imported Messenger through the second dam of his sire, who was by that horse. The

dam of Henry Clay was a great trotting mare, of unknown blood. From this horse we have the various families of Clays of the present day, and also the Patchens—the trotting stallion George M. Patchen, the greatest trotting stallion of his day, and the original of the name, being a grandson of the original Henry Clay.

The *Morgans* are perhaps our oldest trotting family; and if they have not produced our very fastest trotters, their produce undoubtedly deserve to take the very highest rank as good-tempered, hardy, and pleasant roadsters. They are descended, in the paternal line, from a horse called Justin Morgan, who was bred in Vermont, foaled 1793, and died 1821. His blood has never been positively known, although it is pretty well established that the Thoroughbred predominated. From him we have the Morrills, the Fearnaughts, the Ethan Allens, the Black Hawks (not including the descendants of Long Island Black Hawk, who was by Andrew Jackson, grandson of Bashaw, above alluded to, and had none of the Morgan blood in his veins), the Daniel Lamberts, the Knoxes, and the Golddusts. The popularity of this family at one time was unbounded; and no blood, excepting that of the Thoroughbred, has been so generally disseminated and so highly esteemed throughout the United States. At present it is not so highly prized by those who place speed above all other qualities; but go where you will among livery-stable keepers or horse-railroad managers and ask what type of horse they have found most profitable to use and wear out on the road, and the almost invariable answer will be, "The old-fashioned Morgan."

The *Bashaws*, another popular family of trotters, are very closely related to the Clays and Patchens, having a common ancestry in

Young Bashaw, who was the sire of the Andrew Jackson above referred to. Young Bashaw was by the imported Bashaw, his dam was by a Thoroughbred sire, and his grandam was by imp. Messenger. The most celebrated of the Bashaw family proper come through Long Island Black Hawk, who was by Andrew Jackson, out of a mare by Mambrino, son of Messenger. Through him we have Green's Bashaw (so well known in the West), the Mohawks, and many others of note.

The *Pilots:* The blood of the old black pacer Pilot, who was of French Canadian ancestry, has mingled kindly with our best trotting strains, and many of our very best and fastest trotters trace to him, mainly through his son, Pilot Jr. (a horse owned for many years by the late R. A. Alexander, of Kentucky), out of a mare that was nearly Thoroughbred. Old Copperbottom, also a Canadian pacer; Hiatoga, a horse bred in Virginia; Columbus, and Royal George, both from Canada, have all been very popular sires, and no compendium of the origin of the American trotting horse would be complete without reference to them.

In no department of stock-breeding is the influence of heredity and of patient selection with a view to the transmission and improvement of a desired quality more apparent than in the breeding of the trotting horse. Fifty years ago the American trotting horse, *as a breed*, was unthought of; and one that could trot a mile in less than three minutes was a wonderful animal! But the ability to trot fast was a desirable quality, and breeders sought to perpetuate it. Animals that excelled the average of the species as trotters were selected to breed from, with a view to perpetuating and intensifying this quality; but as its possession was at that time an accident—a spon-

taneous variation—it was found that but few of the immediate descendants of the animals first chosen with a view to breeding fast trotters could trot faster than their remote ancestors. But when such of them as did show improvement in this direction were again selected for breeding purposes and coupled together it was found that, while there were still many failures, the proportion of the descendants that showed improvement in the trotting gait beyond the average of their ancestors was materially increased. And so by selecting from generation to generation from such families as have shown a tendency to improvement in this quality we have made considerable progress toward founding a breed of trotting horses.

So generally is the attention of the breeders of trotting horses directed to the "bright, particular stars" in the trotting firmament each year that we lose sight of the immense number of horses that trot a mile in 2:30 to 2:50—a gait that twenty-five, and even fifteen years ago, was fast enough to entitle a horse to rank as a creditable performer on the turf; and in our admiration for these great performers we have failed to note the extent to which the *average* speed of the so-called trotting families has been improved. What horseman who has reached the age of fifty years can not remember how very rare three-minute trotters were when he was a boy? And yet what a large proportion of our Hambletonians, Clays, Bashaws, and Mambrinos now trot faster than a mile in three minutes!

We have still much to do before we can claim to have established a breed of trotting horses, and the more closely we confine ourselves to judicious selections from the families that *trot* and *produce* trotters the more rapid will be our progress in the forma-

tion of a breed in which superiority at the trotting gait shall be an inherent and transmissible quality. It may *possibly* become necessary to resort to crosses outside of these trotting families for improvement in some other quality; but there is no out-cross that we can possibly make without danger to the transmission and improvement of the trotting gait. Even those of our trotters that belong to none of the recognized trotting families are almost invariably the result of selection with a view to this faculty. In almost every case of "breeding unknown" we have found that the dam was "a fast trotter." In short, the more thoroughly we investigate the course of breeding that has produced our trotting horses the more completely does it confirm the theory of breeding from animals that possess the quality we wish to perpetuate. The endurance, and vim, and energy that make the great trotter undoubtedly come from the Thoroughbred; and the *form* for speed at the trotting gait comes from the same source; but we have selected, and trained, and bred with an especial view to adaptation to this special purpose, until we have a fixed characteristic — an inheritance of speed at the trotting gait, and an inheritance of mental quality, adapting the horse to this special use, in which the modern American trotter is as much superior to the average Thoroughbred as is the best race horse that ever struck hoof upon the Epsom Downs to the average Arab of today.

ORLOFF TROTTERS.

Although the Orloff trotters of Russia have been but sparingly introduced into this country, yet they are so frequently referred to in discussions upon horse-breeding, and especially in those pertain-

ing to the breeding of trotting horses, that a brief reference to the breed and a comparison of their merits with our own trotters cannot fail to be interesting. The breed takes its name from Count Alexis Orloff Tschismensky, an enthusiastic horseman of Russia, who, in 1775, imported from Arabia a gray stallion named Smetanxa, said to have been of unusual size and strength. A Danish mare was bred to this imported Arabian stallion, and the produce was a horse known as Polkan 1st. From a union of this half-blood with a Dutch mare sprang a stallion known as Bars 1st, which is generally regarded as the progenitor of the Orloff race of trotters. The fame of this quarter-blood, Bars 1st, was chiefly perpetuated through his sons Lubeznay 1st, Lebed 1st, and Dobroy 1st.

It is worthy of especial note that we have an almost exact parallel of the course of breeding which laid the foundation for the Orloff trotting horse in the case of the imported Barb, Grand Bashaw, a gray stallion imported to the United States from Tripoli by Mr. Joseph C. Morgan. This horse got Young Bashaw (also gray), out of Pearl by First Consul, and he in turn got Andrew Jackson, out of a mare of unknown blood. It will be observed that the Russian trotter Bars 1st and Andrew Jackson were each three removes from their Oriental ancestry, and that in this third remove the trotting excellence first began to manifest itself. Bars 1st laid the foundation for the Orloff trotting horse, and was himself a distinguished trotter; Andrew Jackson was the most noted trotting stallion of his day, and from him are descended the Bashaw, Patchen and Clay trotters of the present time. We have no positive knowledge as to the breeding of the Danish mare, the dam of Polkan 1st, or of the Dutch mare that produced Bars 1st, while Pearl, the

dam of Young Bashaw, was a well-bred mare, she being by a thoroughbred sire, out of Fancy by imported Messenger. As to the blood of the dam of Andrew Jackson we are left to conjecture. The similarity of the foundation of these two races of trotting horses is therefore quite apparent.

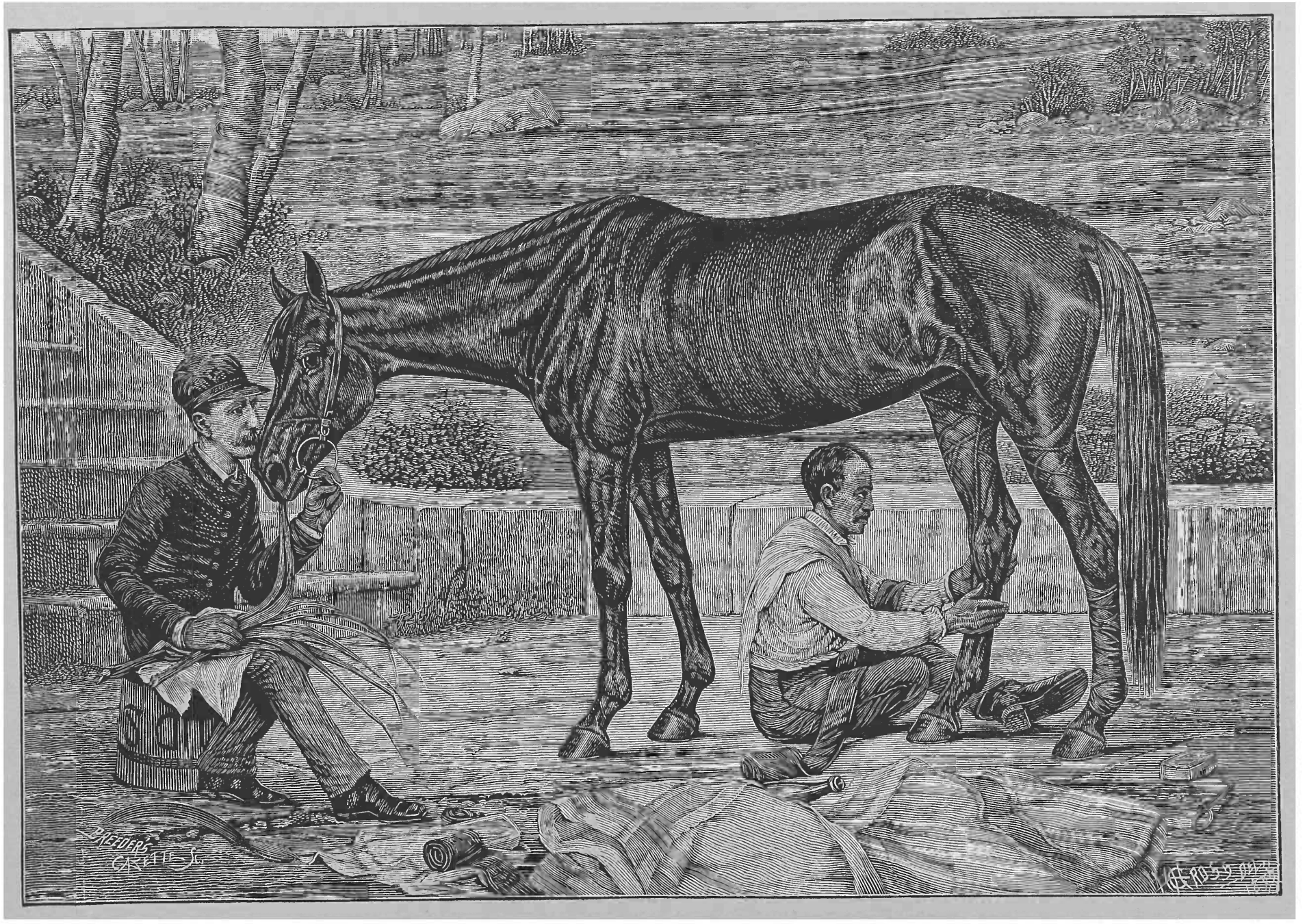
Count Orloff and his successor, V. T. Shiskin, devoted themselves assiduously to the improvement of these horses, selecting their stallions exclusively from the foundation above alluded to, but resorting frequently to English and Dutch mares of known excellence; so that the Orloff trotter, like the American, is of a mixed origin, and neither the Arab, the Barb, nor the English Thoroughbred can claim exclusive paternity in either case. Selection and crossing, with a view to adaptation for a specific use, has accomplished the work of creating in both countries a race of trotting horses. Count Orloff was an intelligent enthusiast in the business—as all successful breeders have been—and he persistently refused to part with any of his entire horses, preferring that he alone should dictate the choice of sires to be used to perpetuate and improve the race. After his death the stud was scattered; a considerable portion of it passed into the possession of the crown, but several private studs were founded, and a stud book was instituted to aid in the work of keeping the race free from further admixture, although with the Russians, as with us, the question is not very well settled as to what constitutes the best trotting pedigree, and purity of blood is a rather vague and indefinite term when applied to the Orloff as well as to the American trotter. The Count had been an enthusiastic patron of the race course as a means of developing and testing the powers of his horses, and since his time the gov-

C. D. Smith
800

ernment has given its powerful aid to promote the same object, not only by establishing breeding studs, but by furnishing more than one-half of the prize-money that is contested for at these trotting races, which have been held regularly in that country for the last sixty years.

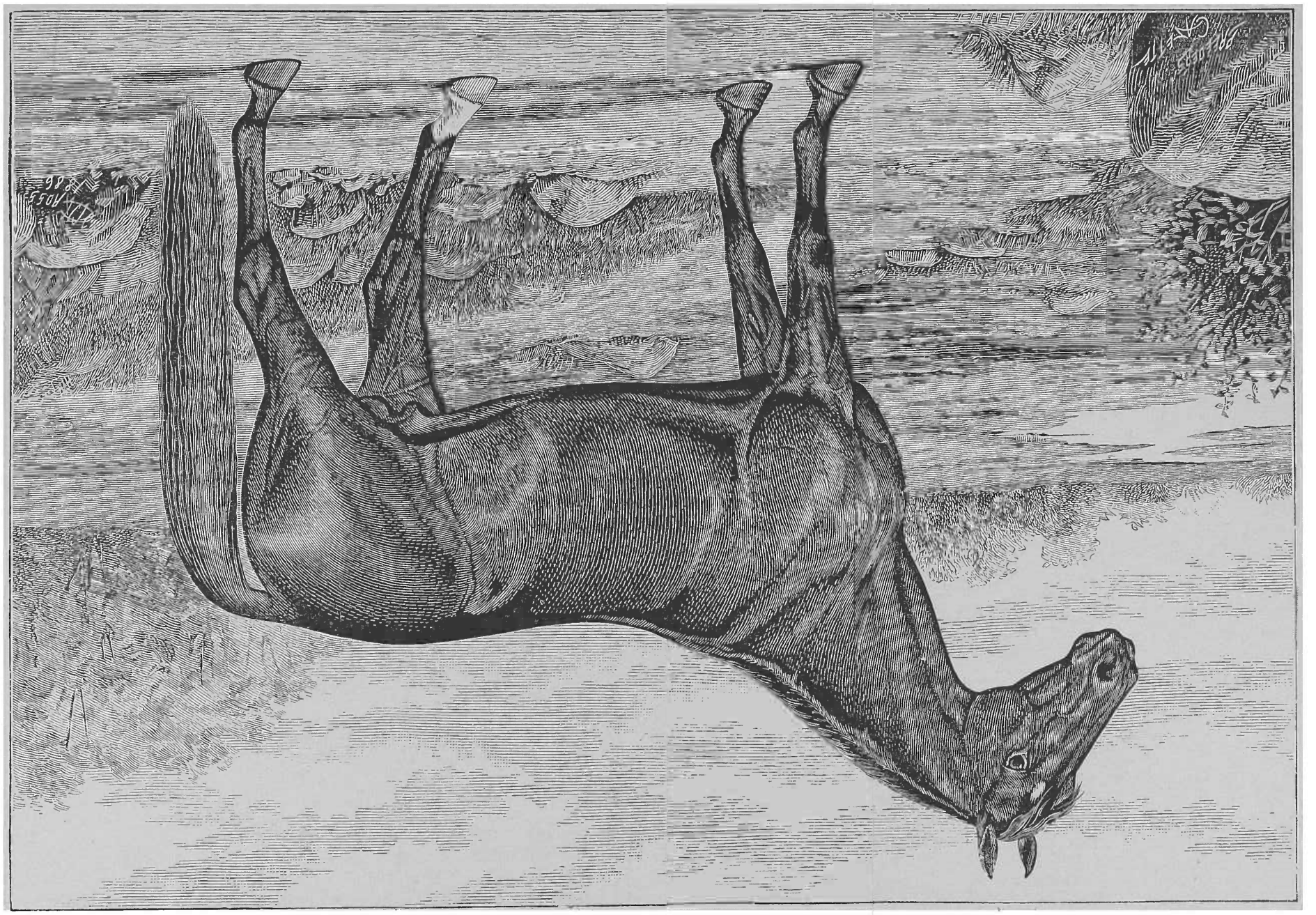
TROTTING MARE MAUD S.

Color, chestnut; foaled 1874; got by Harold, son of Rysdyk's Hambletonian; dam Miss Russell by Pilot Jr.; 2d dam Sally Russell by Boston. Bred by A. J. Alexander, Spring Station, Ky.; owned by Robert Bonner, New York city. Engraved after a sketch from life by Cross, showing her at ten years old. Her record of a mile in 2:08¾ has never been equaled by any trotting horse in the world; and she has been the recognized "queen of the trotting turf" ever since Sept. 18, 1880, when she made a record of 2:10¾. She combines in her blood lines the Hambletonian and Pilot trotting families (see pages 92 and 94) upon a Thoroughbred foundation, her 2d dam Sally Russell being a Thoroughbred mare. The artist has represented her as being groomed immediately after a race or other violent exercise, the colored groom seated under her being in the act of wrapping her legs in the flannel bandages commonly used by trainers upon such occasions.



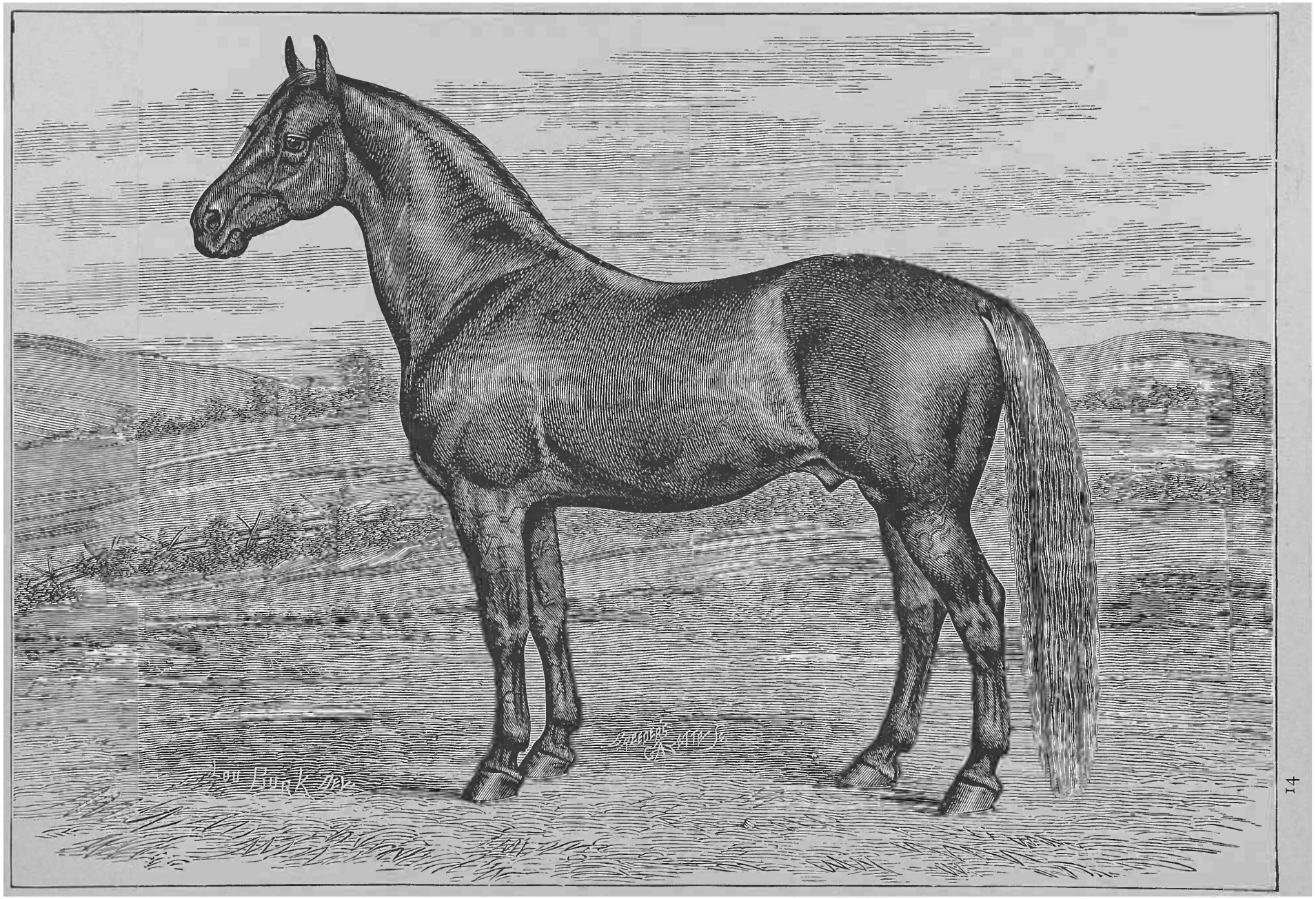
TROTTING HORSE PHALLAS.

Color, bay; foaled 1877; got by Dictator, son of Rysdyk's Hambletonian; dam by Clark Chief, son of Mambrino Chief; 2d dam by Ericsson, son of Mambrino Chief. Bred by H. C. McDowell, Lexington, Ky.; owned by J. I. Case, Racine, Wis. Engraved after a sketch from life by Cross, showing the horse at seven years old. His trotting record of a mile in 2:13¾, July 14, 1884, has never been beaten or equaled by a stallion but once, and then it was beaten only by a quarter of a second. Phallas combines in his pedigree the blood of the Hambletonian and Mambrino Chief families, being especially in-bred to the latter. His sire Dictator is one of the most highly-prized sons of Rysdyk's Hambletonian, and is full brother to Dexter, the most famous trotting horse of his day.



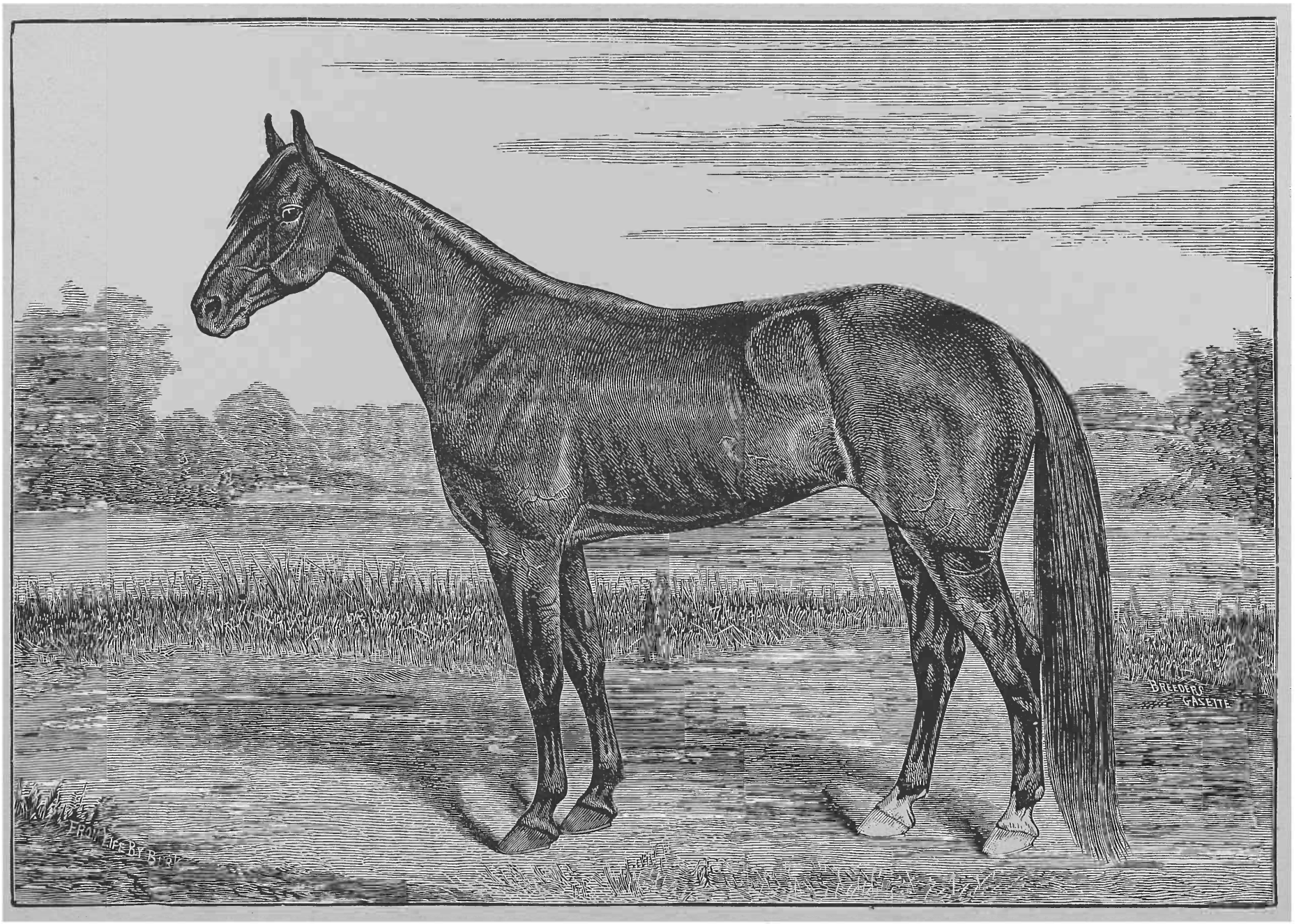
TROTTING HORSE HEROD.

Color, black; foaled 1866; got by King Herod, son of Sherman Black Hawk; dam by Green Mountain Boy, son of Vermont Black Hawk; 2d dam by Gifford Morgan. Bred by James Brooks, Ossian, Ia.; owned by M. T. Grattan, Preston, Minn. Engraved after a sketch from life by Burk, taken when the horse was in his twentieth year. This horse, when eighteen years old, made a public trotting record of 2:24½, and is undoubtedly one of the best, if not the very best, living representatives of the Morgan trotting family. As the Sherman Morgan mentioned above was a son of Vermont Black Hawk, the most famous Morgan stallion of his day, and Green Mountain Boy was also by the same sire, and Herod's second dam by Gifford Morgan, it will be seen that he is strongly in-bred to this popular and valuable family of trotting horses. Vermont Black Hawk and Gifford Morgan were both grandsons of Justin Morgan, the founder of the Morgan family of horses.



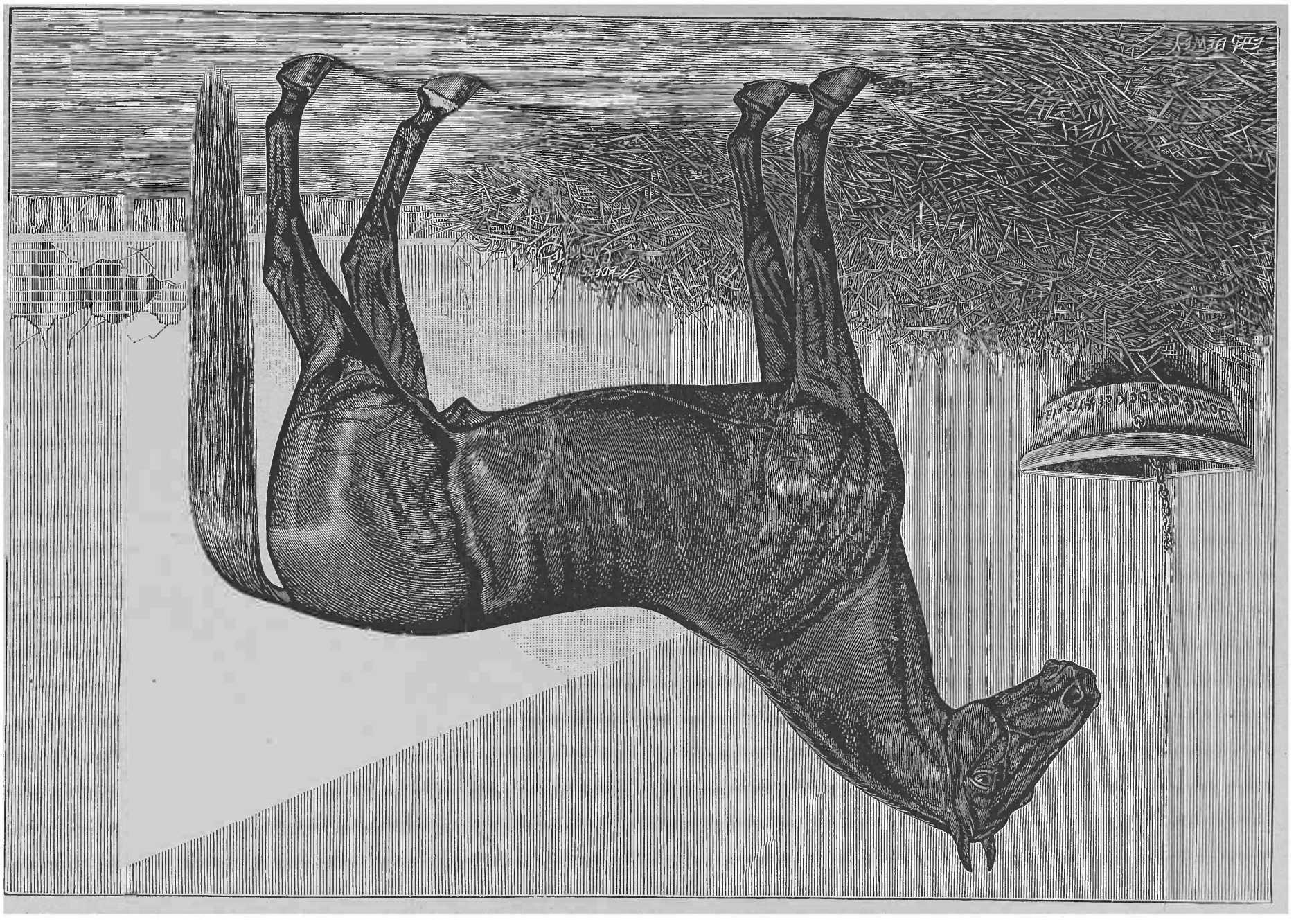
TROTTING MARE TRINKET.

Color, bay; foaled 1875; got by Princeps, son of Woodford Mambrino; dam Ouida by Rysdyk's Hambletonian; 2d dam Morning Glory by imp. Consternation. Bred by R. S. Veech, Louisville, Ky.; owned by J. W. Shaw, New York city. Engraved after a sketch from life by Burk, showing the mare at seven years old. Trinket as a four-year-old made a trotting record of a mile in 2:19¾, which up to that time had never been equaled by a horse of her age.


BREEDER GAZETTE

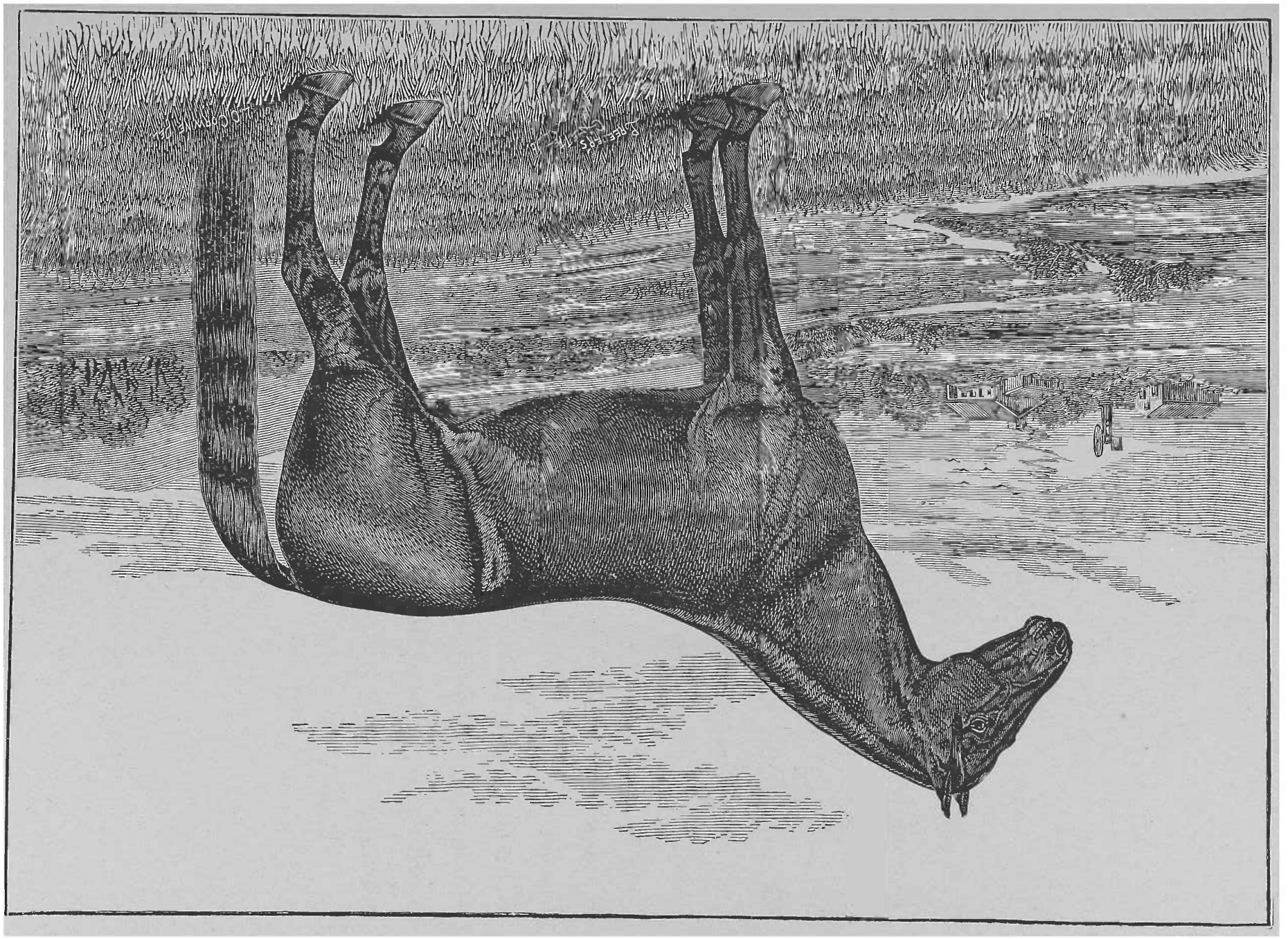
TROTTING HORSE DON COSSACK.

Color, bay; foaled 1876; got by August Belmont, son of Rysdyk's Hambletonian; dam Laytham Lass by Alexander's Abdallah, son of Rysdyk's Hambletonian; 2d dam by Mambrino Chief. Bred by J. C. McFerran & Son, Louisville, Ky.; owned by Arthur J. Caton, Caton Stock Farm, Joliet, Ill. Don Cossack made a trotting record of 2:28 at five years old, and since then has been kept exclusively for service in the breeding stud at Caton Stock Farm, where his merits as a sire have become so conspicuous that he has scarcely ever been defeated in the show ring when exhibited with his get. Engraved after a painting by Dewey, showing the horse at four years old.



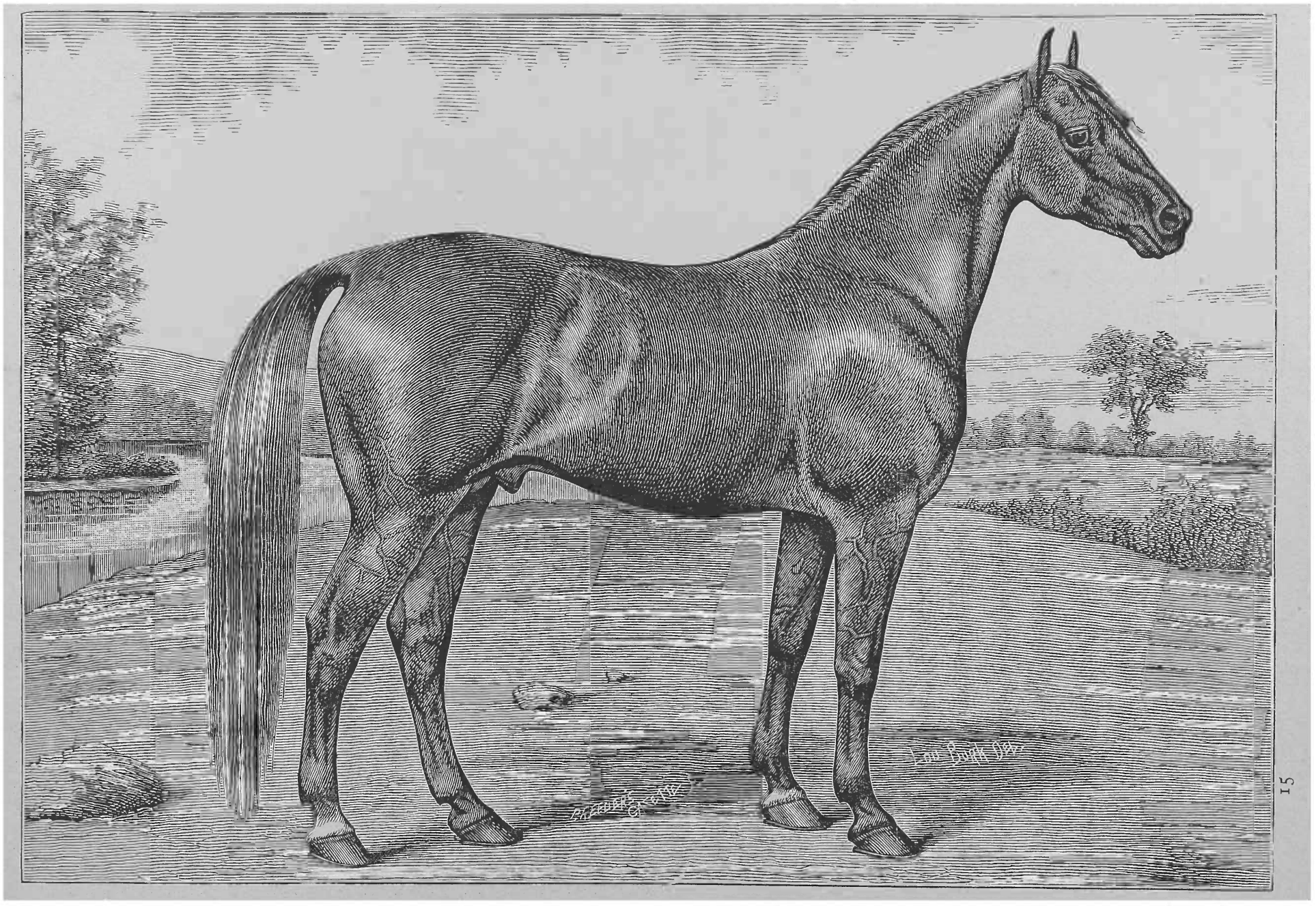
TROTTING HORSE FAIRY GIFT.

Color, brown; foaled 1876; got by Hero of Thorndale, son of Thorndale; dam Fairy Belle by Belmont, son of Alexander's Abdallah; 2d dam Waterwitch by Pilot Jr. Bred by F. P. Kinkead, Woodford Co., Ky.; owned by A. G. Danforth, Washington, Ill. Engraved after a sketch from life by Corwine, showing the horse at eight years old. This horse is strongly in-bred to Rysdyk's Hambletonian through several lines, Thorndale also being by Alexander's Abdallah (sire of Goldsmith Maid), who was a son of Rysdyk's Hambletonian, and Thorndale's dam was also by this famous old sire. He also has the Mambrino Chief cross through Belmont, and the Pilot cross through his second dam, Waterwitch, the famous old mother of trotters. Fairy Gift is used as the chief breeding stallion in the trotting department of Melbourne Stock Farm.



TROTTING HORSE DOC VAIL.

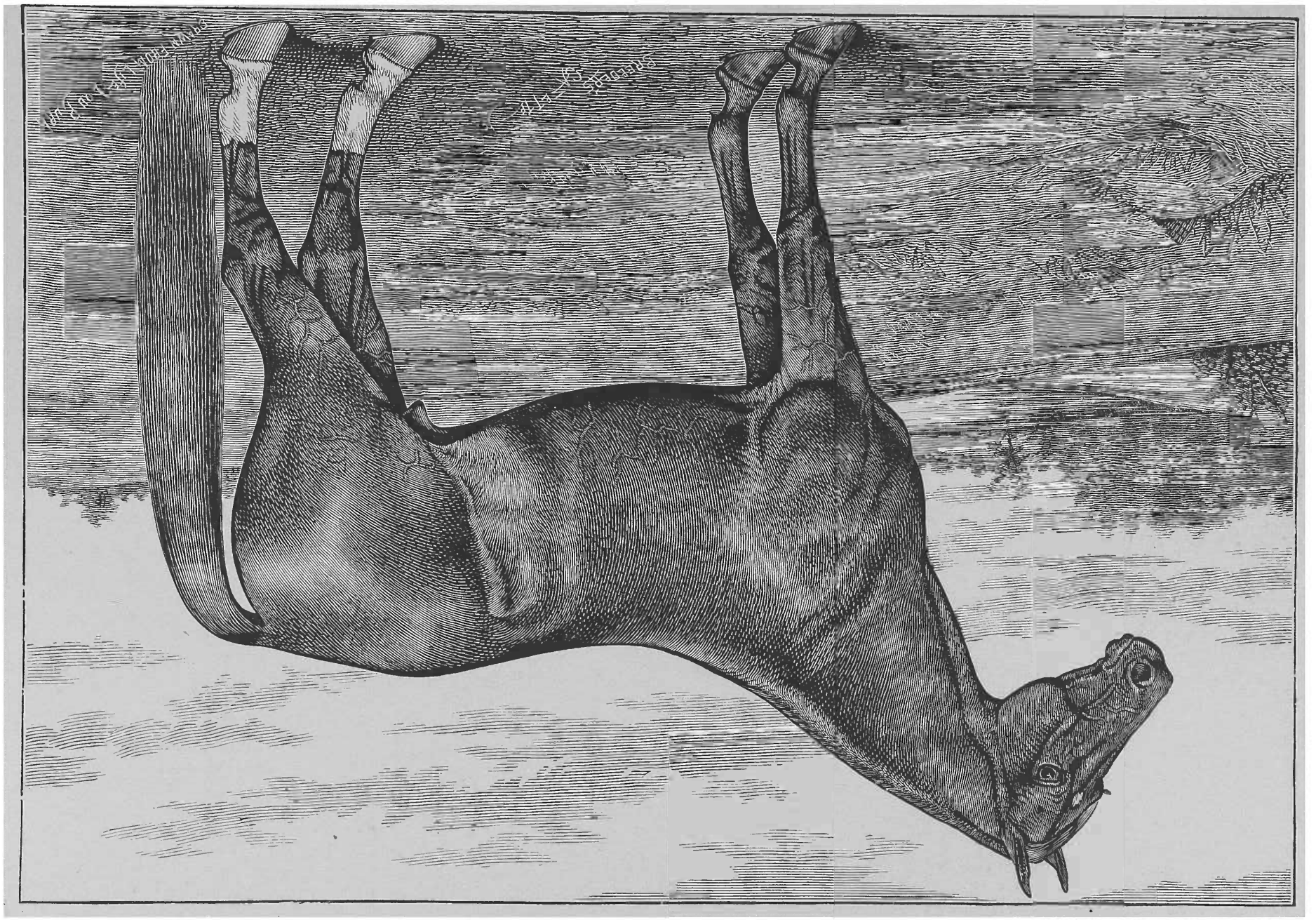
Color, brown; foaled 1880; got by Swigert, son of Alexander's Norman; dam Lady Gano by Stephen A. Douglas; 2d dam Guinea Hen by Long Island Chief. Bred by W. T. Vail, now of Greeley, Col.; owned by W. P. Higinbotham, Manhattan, Kan. Engraved after a sketch from life by Burk, showing the horse at five years old. Doc Vail's sire, Swigert, had for his dam Blandina by Mambrino Chief, and his second dam was the famous Burch Mare by Brown Pilot. In the maternal line the ancestry of Doc Vail have long been distinguished for highly useful qualities as roadsters. This horse is used at the head of the Blue Valley breeding stud.



15

TROTTING HORSE WILKOMONT.

Color, chestnut; foaled 1881; got by Almont Pilot, son of Almont; dam Wanita by George Wilkes; 2d dam Vienna by Berkley's Edwin Forrest. Bred and owned by E. A. Smith, Lawrence, Kan. Engraved after a sketch from life by Burk, showing the horse at four years old. Wilkomont has the Hambletonian and Mambrino Chief blood through his grandsire Almont, who was a grandson of Rysdyk's Hambletonian, and whose dam was by Mambrino Chief. He also has the Hambletonian and Clay blood through his dam (Wanita) by George Wilkes, one of the most famous of Hambletonian sires.



CHAPTER IV.

ENGLISH AND FRENCH COACH HORSES.

CLEVELAND BAYS.

Many years ago, before the advent of the railway, there was recognized in England a breed of horses called Cleveland Bays; but with the general application of steam to the uses of locomotion the breed fell into disuse, and nearly all English authors with whom I am conversant who have written within the past thirty years upon the horses of Great Britain have treated the breed as extinct. Within the past three or four years, however, there has been a determined effort on the part of Yorkshire breeders to gather up whatever may yet be remaining of this once popular blood and to resuscitate the breed. To this end a society was organized about two years ago, and Vol. I of the Cleveland Bay Stud Book has been issued as a result of this effort.

Following modern English authors and the English agricultural press, I have repeatedly within the past ten years expressed the opinion that the Cleveland Bays were no longer regarded as a distinct breed in that country, and for expressing such an opinion I have been subjected to much ill-natured criticism. I certainly had no reason to misrepresent the facts, and only aimed to give accurate,

reliable information, to those who asked for it, upon a subject that interested all horse-breeders. Within a few years past the English agricultural press have begun to again speak of the Cleveland Bay as a breed, but as late as Nov. 18, 1881, I find the London *Live-Stock Journal*, the only distinctively live-stock serial publication in Great Britain, stating that:

"The Cleveland that some people write about is not a Cleveland; it is only the nearest approach to what the Cleveland was like. If there is such a thing as a pure Cleveland the owner should stick to him; the breed, it is possible, may be resuscitated."

The *Mark Lane Express*, of about the same date, qualified a reference of the same sort by the remark, "if there be such a breed"; and Mr. Frederick Street, who as late as 1883 wrote "The History of the Shire Horse" in England, speaking of the heavier classes of horses, says: "The only distinct breeds now recognized are the Shire horse or English Cart horse, the Clydesdale, and the Suffolk, the Cleveland Bay being well-nigh extinct"; and the standard writers upon the horse for many years past, such as Youatt & Burn, Youatt & Spooner, Prof. Low and "Frank Forrester," have all treated of the Cleveland Bay as an extinct breed.

It must be conceded, therefore, that if I have been wrong in stating that the Cleveland Bays were no longer recognized in England as a distinct breed I was at least in good company.

About four years ago I addressed a letter to Mr. George T. Turner, editor of the *Mark Lane Express*, of London, asking for his opinion as to whether the Cleveland Bay still existed as a distinct breed in that country. He replied in substance that of late a demand for the old sort of Cleveland Bays had sprung up, and

the breed was in a fair way to be resuscitated. He thought there was material enough left to operate on, and stated, to quote his exact words, that "the Cleveland is undoubtedly the produce of the Thoroughbred horse (race horse or hunting stallion) on the North country cart mares; this was the origin of the breed, and it was created for coaching purposes. The coaches, toward the last, required faster horses, and these were superseded by the railway. So the Cleveland fell into desuetude. Now they are wanted again for fast, heavy town work. If a stud book were started we should see that material was in existence." He added that he would agitate the question in England.

A week or two later there appeared in his paper, the *Mark Lane Express*, the following:

"In reply to a question from a correspondent in the United States as to the present status of the Cleveland breed of horses in this country, we are of opinion that there is material enough left, especially in Yorkshire, to form the basis of a herd book and a very profitable breeder's industry. The railway locomotive drove the old Cleveland Bay horse off the road, but the more modern type of Cleveland horse, or at all events Yorkshire-bred horses of the Cleveland stamp, with rather more of the Thoroughbred stallion's influence apparent, are precisely the cattle that are to be seen in the use of railway companies for their lighter work, especially the newly-appointed omnibuses which have been started by the railway companies in London, and for which the cheaper French horses hitherto used are neither strong enough nor fast enough. It is remarkable that the railway companies, which took the old Cleveland horse's occupation away, should be among the first to give it back again

in a different form; but it is plain enough to any one who will give the necessary attention to the subject that the light van work of the new heavy omnibus work of the metropolis is bringing to London a lot of very superior and valuable horses from the northern breeding districts, which to all appearances have the old Cleveland blood for their basis, and which obtain their speed and style from the judicious use of the blood of the Thoroughbred stallion."

This seems to leave no room for doubt that the so-called Cleveland Bay of today is being created, as was the breed when it was formerly considered a breed, by a mingling of the blood of the Thoroughbred race horse with that of the large bay mares of Yorkshire; hence, while I adhere to the opinion that, properly speaking, the old Cleveland Bay has become extinct, *as a breed*, yet it is not at all improbable that there are still remaining in that region horses possessing the old Cleveland Bay characteristics, and perhaps much of the blood that formerly belonged to that breed; and it is evident that the same course of breeding which originally formed the breed might speedily restore it from the material now remaining in that country, as well as in this, viz.: the use of stout, strong, and stylish Thoroughbred sires upon large, active, and stylish bay mares. Whatever of this material there may yet be in existence in Yorkshire and elsewhere in England will no doubt be utilized for this purpose, and to this end the new Cleveland Stud Book will certainly be of great service.

FRENCH COACH HORSES.

As early as 1780 the French Government began a systematic effort to improve the native horse stock of that country, especially for the

cavalry service, by the introduction of Thoroughbred and Hunting stallions from England, and offering their services to the farmers at a merely nominal fee. From that time down to the present the French Government has continued its paternal supervision of the horse-breeding interests of that country, introducing from year to year Thoroughbred stallions in considerable numbers, and selecting the best of the male produce resulting from the union of the imported stallions and the French mares for use in the stud. Since about 1840, however, the introduction of Thoroughbred stallions has fallen off in that portion of France devoted especially to Coach-horse breeding, while the number of native-bred horses selected for use in the stud has proportionately increased. At times, under the supervision of the Government, the introduction of Thoroughbred sires has ceased almost entirely; and again, when those in authority have been of the opinion that the blood of the Thoroughbred could still be used to advantage, fresh importations have been made. Some of these imported stallions left a marked impress upon the horse stock of the country, notably among these being the horse Young Rattler, imported about 1820, whose produce were especially remarkable for their stylish, high-headed appearance, and high, proud-stepping action. The get of this horse were largely selected by the Government agents for breeding purposes, and to him more than to any other one of these imported sires the present Inspector-General of the Government Haras, the Vicomte de la Motte-Rouge, ascribes the origin of the present so-called Coach horses of France. The foundation had been previously laid by crossing and recrossing with the Thoroughbred, but Young Rattler, and the stallions of his get, gave the qualities which the French people especially fancied for

coaching uses. Since that period this coach-horse type has received more largely than any other, perhaps, the fostering care and patronage of the Government; and certainly very marked improvement has been effected, and a considerable degree of uniformity has been secured. The prevailing color is bay, but there are many chestnuts among them and blacks are occasionally seen.

When the system of breeding above alluded to was inaugurated the produce of the union of the Thoroughbred sires with the French mares were called *demi-sang* (half-blood); and notwithstanding the "breeding-up" process which has constantly been going on for over one hundred years these horses are still called *demi-sang*, and are so classed in the prize lists for the horse shows of that country. But they are frequently spoken of in France as Normans, from the fact that they are chiefly bred in what was formerly known as Normandy.

It is only within a recent period that French Coach horses have attracted attention at the hands of American importers and breeders; the draft horses of that country having largely monopolized the attention of American stock-raisers traveling in France. But within the past two or three years the growing demand for stylish, high-stepping coach horses in America has led to the importation of French Coachers in considerable numbers. The course of breeding that has produced these horses in France is much the same as that which has created the modern Cleveland Bay of England, the blood of the Thoroughbred largely predominating in both, the only difference being in the mares that have constituted the basis.

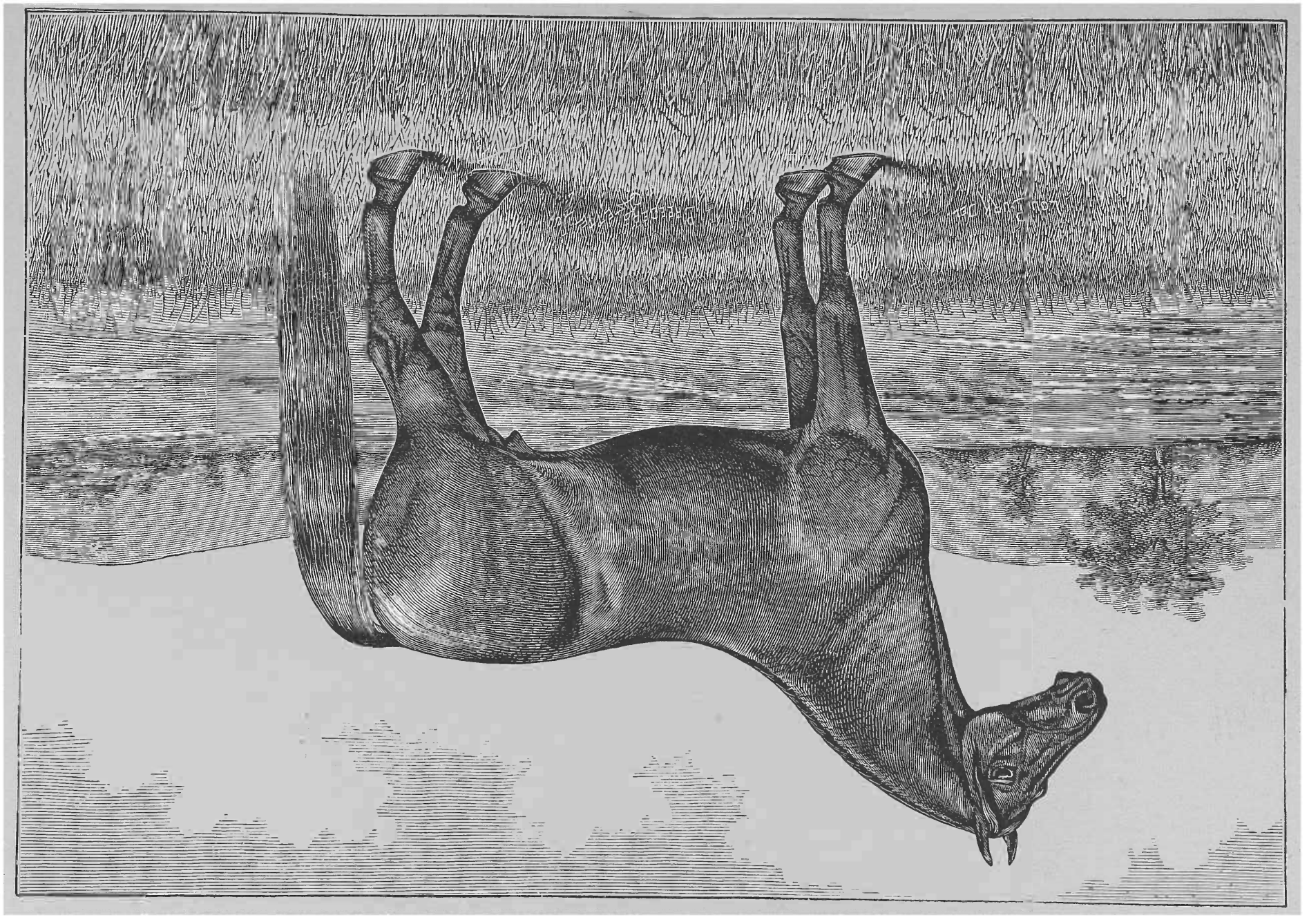
It must not be understood from what has been said in the foregoing that the breeding of Coach horses is carried on throughout

all of France, nor that the use of Thoroughbred stallions is now discouraged by the Government. It is only in the departments of Orne, Calvados, Manche, Seine-Infeieure, and a part of Eure that the attention of the Government is especially directed to the production of Coach horses. In the departments above named there are two Haras, or Government stables, one at Pin and the other at St. Lo. In other departments, as in Le Perche, attention is chiefly given to the Percheron, while the Boulonnais, the Breton and the Thoroughbred are encouraged elsewhere.

It may also be of interest to note in this connection that in addition to the stallions owned by the Government there are two classes of stallions of various breeds owned by private individuals that may be mentioned as receiving Governmental recognition. First, *approved* stallions, which, after inspection by the authorities, are granted a subsidy for remaining in the country and serving mares at prices fixed by their owners. This subsidy amounts in the case of Thoroughbred stallions to from about $150 to $500 a year; Coach horses (*demi-sang*), $75 to $150 a year; and draft horses from $50 to $100 a year. The second class are *authorized* upon inspection to serve mares, but receive no subsidy. No stallions excepting those belonging to the Government, and those that are approved or authorized, are allowed to do stud duty.

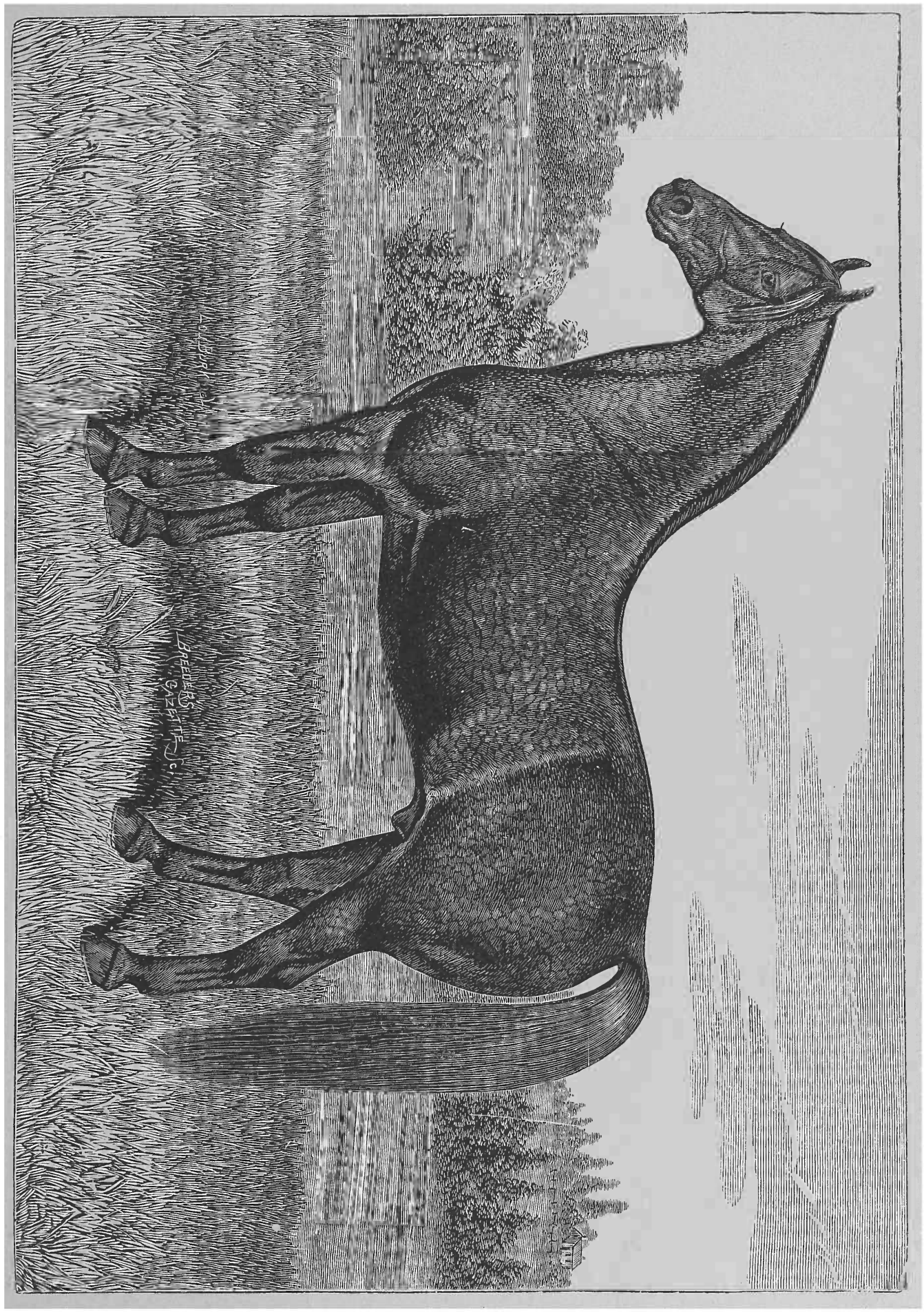
CLEVELAND BAY HORSE COMPETITOR.

Color, bay; foaled 1880; got by Young Candidate, son of Omar Pacha; dam by Emperor, son of General Benefit. Bred by William Taylor, of Yorkshire, England. Imported 1884, and owned by George E. Brown & Co., Aurora, Ill. Engraved from a sketch by Burk, taken when the horse was five years old.



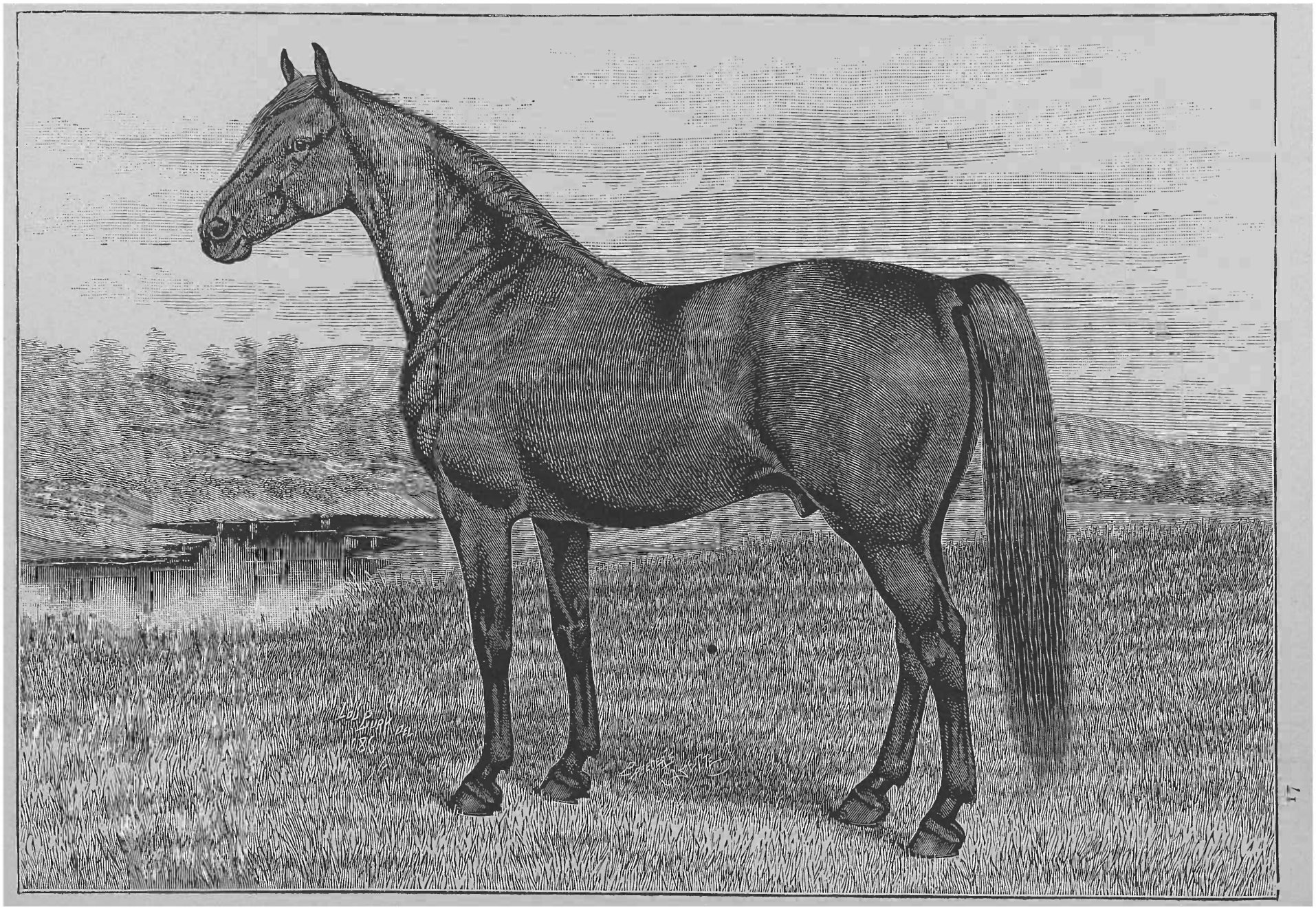
CLEVELAND BAY HORSE DALESMAN 2D.

Color, bay; foaled 1879; got by Lord Beaconsfield, son of Rosebury; dam by Paulinus; 2d dam by Rimphon. Bred by John Cook, West Yorkshire, England; imported 1881 by the Door Prairie Live-Stock Association, Door Village, Ind. Engraved after a sketch from life by Burk.



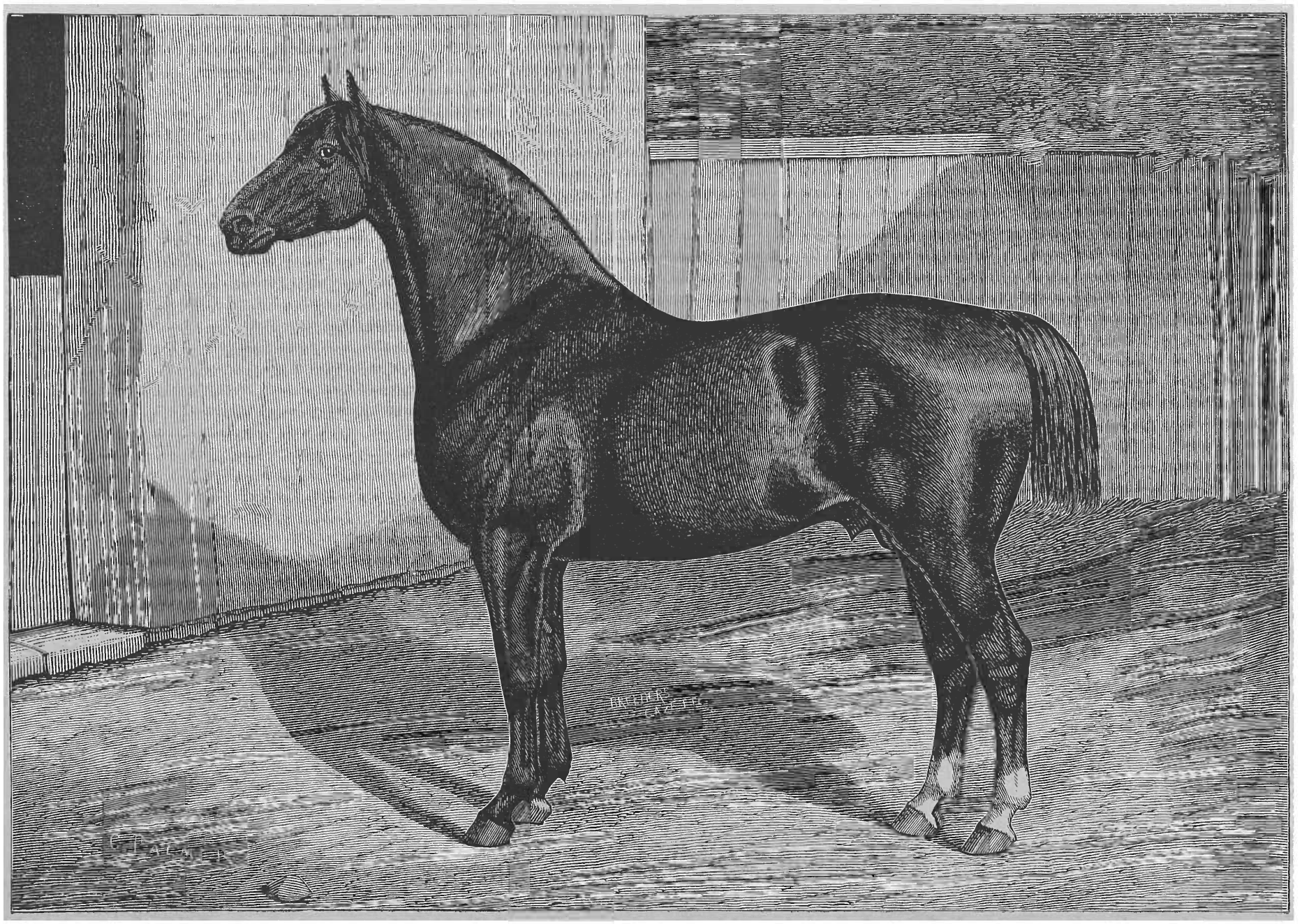
CLEVELAND BAY HORSE ROYALTY 81.

Color, bay; foaled May, 1884; got by Prince of Wales, son of Emperor; dam Modesty by Palestine; 2d dam Brisk by Ebor. Bred in Yorkshire, England; imported 1886 by his present owners, Stericker Bros., Springfield, Ill. Royalty won many prizes in England as a suckling and yearling, and his dam has also had a remarkably successful show-yard career. He is a bay without a white marking. Sketched from life by Burk.



FRENCH COACH HORSE SUPERBE.

Color, bay; foaled 1881; got by the Government stallion Thuriferaire 10306; dam Opheline by Jambes d' Argent; 2d dam by Valide. Bred by M. Pacaud, of St. Gervais, La Vendee, France. Imported in 1885, and owned by M. W. Dunham, Wayne, Ill. Engraved from a sketch made by Palmer a few weeks after the horse was imported. Superbe was winner of a first prize and gold medal at the Universal Exposition at Antwerp, Belgium, 1885.



CHAPTER V.

ENGLISH SHIRE OR CART HORSES.

No point in equine history is better established than is the fact that to the regions bordering on the western coast of Europe, once known as Normandy and Flanders, the world is indebted for the basis of its various breeds of draft horses. Flanders especially was famed, away back in the middle ages, for its famous breed of Black horses; and this race appears to have been the prevailing one throughout the north of ancient Gaul and of Germany, from the mouth of the Rhine eastward, and Prof. Low thinks "inhabited in the wild state the vast region of marsh and forest which stretched all through Europe eastward to the Euxine sea." It was from this source that the rulers of Great Britain drew in large numbers for the purpose of increasing the size of the horses of the Island. How or when this breed originated is a subject upon which history throws no light; but as early as the eleventh century they were largely imported into England, and royal edicts and regulations were repeatedly issued for the purpose of encouraging the use of the large stallions of this breed. King John imported at one time 100 choice stallions from Flanders, Edward II followed in the same course, and it would seem that in the time of Henry VIII these Flemish horses were inseparably associated in the British mind with the idea of immense size and mas-

sive proportions, for we are told that when King Henry first saw the Princess Anne of Cleves, a remarkably large, coarsely-formed woman, who was to be his fourth spouse, he expressed his opinion of her by the ejaculation: "Egad, she is shaped like a great Flanders mare!"

It is not my purpose to follow up, step by step, the several importations that were made, from time to time, of these heavy horses from Germany, Holland, and Flanders, nor to recount the various stages of development which resulted in the formation of what is now known as the Shire horse or English Cart horse. One of the early Earls of Huntingdon is mentioned by Prof. Low as having been especially active in his efforts to improve the British breeds of heavy horses; and Robert Bakewell, who first taught the world the principles of good stock-breeding, brought his great genius and skill to bear upon this branch of the business. He went himself to Holland, where he selected several mares which he brought back with him to England; and by pursuing the same methods of careful selection, mating, and feeding by which he had achieved such distinguished success with other kinds of live stock, he showed the English people how to form a breed of draft horses which has since become famous the world over. Other breeders followed his example, and as late as the beginning of the present century importations of both stallions and mares from Flanders were by no means uncommon.

At this time the black color was still a characteristic and distinguishing feature of the heavy horses of England, as it was of the parent stock from across the Channel. They were of immense size, with great strength, but were heavy, dull, and sluggish in tempera-

ment, and slow and awkward in motion. Prof. Low, writing of these horses in his "Domesticated Animals of the British Islands," says:

"The modern English Black horse retains the general characteristics of the pre-existing race, but greatly modified. His color is usually a sooty black, with frequently a white lozenge-shaped mark on the forehead; and he has very generally one or more of the feet and part of the legs, and not unfrequently the muzzle, white. His body is massive, compact, and round; his limbs are stout, his chest is enormously broad, and his neck and back are short. His mane is thick and somewhat frizzled, and his legs below the knee and hock are hairy down to the heels. His whole aspect conveys the idea of great physical power without corresponding action. The main defects of his conformation and temperament are his too great bulk of body and want of action and mettle. For a pull with a heavy weight he is admirable; but he steps out short, and is slow in all his motions."

In 1879 a society was organized in England for the purpose of preparing and publishing a stud book of the Shire or Cart horse of England, and in February, 1880, the first volume of the work, which has since grown to seven volumes, was issued. In an introduction to the first volume of the Shire Stud Book by R. S. Reynolds, M. R. C. V. S., it is stated that—

"The draft horse of the present day undoubtedly, and unfortunately, is one of mixed and impure breed; there exist few, if any, whose genealogy on both dam's and sire's side can be traced for even four generations. The assumption of an admixture of extrinsic blood is made more evident by comparison of the conformation and color of the existing race with the Shire horse of seventy years

ago. Authorities upon horse-breeding forty or fifty years since were ceaseless in their objections to the slow, ponderous movement of the draft horses of their day, and strongly urged the necessity for crossing them with animals of more slender build, in order to attain increased activity and quicker pace."

Mr. Reynolds, in the work above quoted, also says:

"It is perhaps worthy of observation that there were, and still remain, some specimens of three apparently distinct types of draft horses exemplified by differences in the local distribution of long hair:

"1st. Horses having the upper lip garnished with a long, thick mustache, considered at one time a distinguishing characteristic of the Lincolnshire horse. The color of these appendages is always black, white, or a mixture of the two, and invariably corresponds with the hue of the skin from which they spring.

"2d. Horses having the lips, muzzle, and eyelids destitute of hair. The skin in these situations, being either entirely bald or covered with exceedingly fine down, is almost invariably flesh-colored, sometimes marked with small dark spots and blotches. Specimens of this type may possibly have originated the appellations 'bald horse' and 'balled-faced horse.'

"3d. Horses having a long tuft of hair growing from the front of each knee, and rarer examples having also a similar growth (quite distinct from the ordinary hair of the back of the cannons) from the hind part of the hock, just below its point. Animals of this type are now seldom seen. In my experience they are more frequently met with in Wales than in the English shires, though no reason can be assigned why that is so. It is found that these peculiar

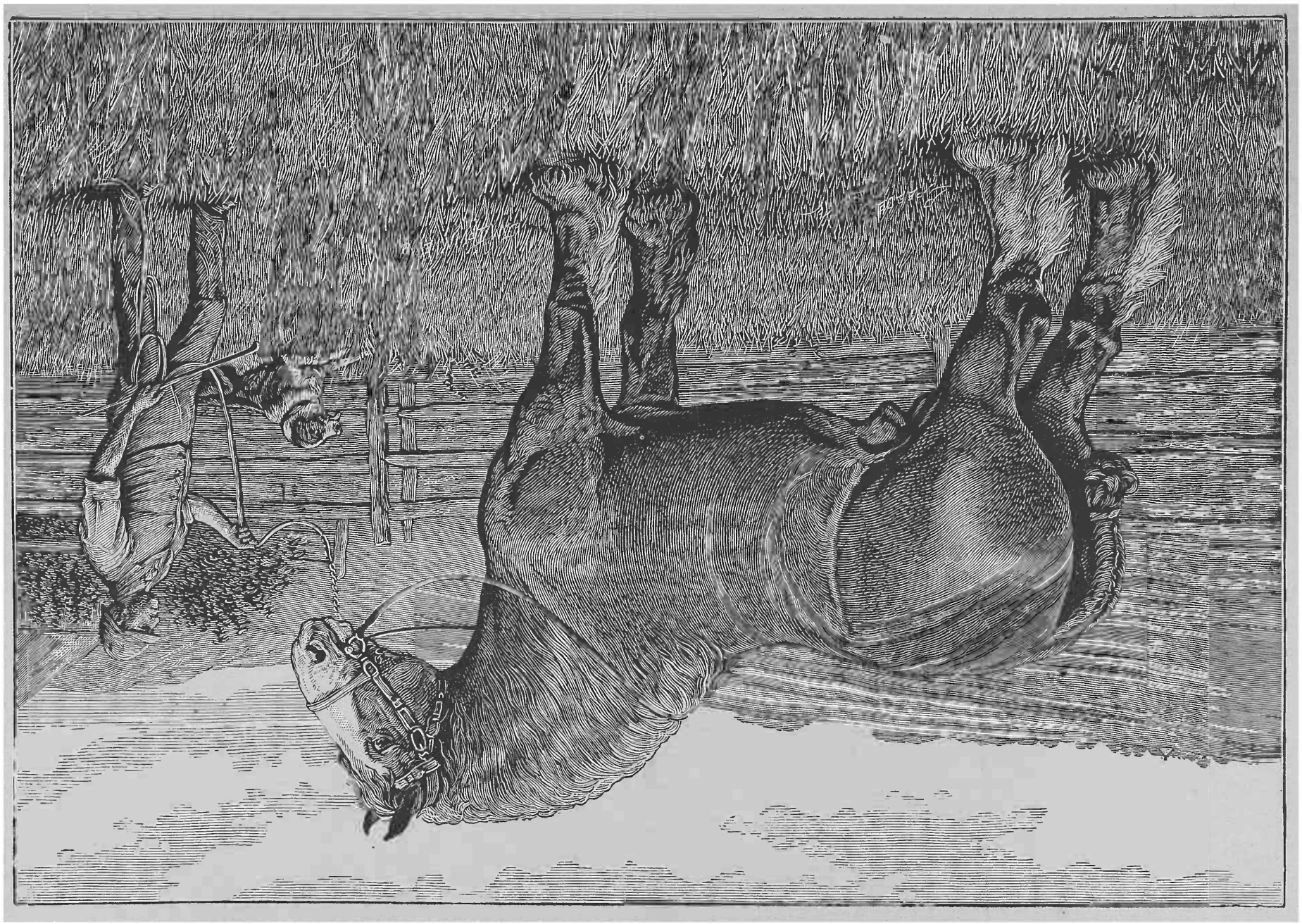
hirsute growths invariably accompany a luxuriant development of long hair in its ordinary situations, and generally a more than ordinary strength of bone below the knees and hocks. Sex does not appear to exert any influence in determining the special characteristics of any of the three types, stallions, mares and geldings being equally prone to inherit these peculiarities from progenitors similarly possessed."

These horses have long been extensively bred in Leicestershire, Staffordshire, Derbyshire, Oxfordshire, Lancashire, Yorkshire, Cheshire, Nottingham, Northampton, Lincolnshire and Cambridgeshire; the last two counties named perhaps producing the most thoroughly characteristic and representative animals of the breed. They are of all colors — blacks, bays and browns predominating — and frequently marked with more or less white in the face, and on the feet and legs. The legs are heavily haired, or "feathered," as Shire-horse breeders express it, and an abundance of fine silky hair from knee or hock to fetlock is considered a mark of pure breeding.

The importation of this great breed of heavy horses to America has not been pushed with as much energy, nor carried on to anything like so great an extent, as the merits of the breed would have justified. Occasional importations of one or two individual animals have been made from time to time, but it is only within the past five or six years that they have been imported in any considerable numbers. They are growing rapidly in popularity, however, in the great agricultural States of the Mississippi Valley, and steps have been taken to secure the early publication of a stud book for the breed in the United States, a society for that purpose having been organized, with Charles Burgess, of Winona, Ill., as Secretary.

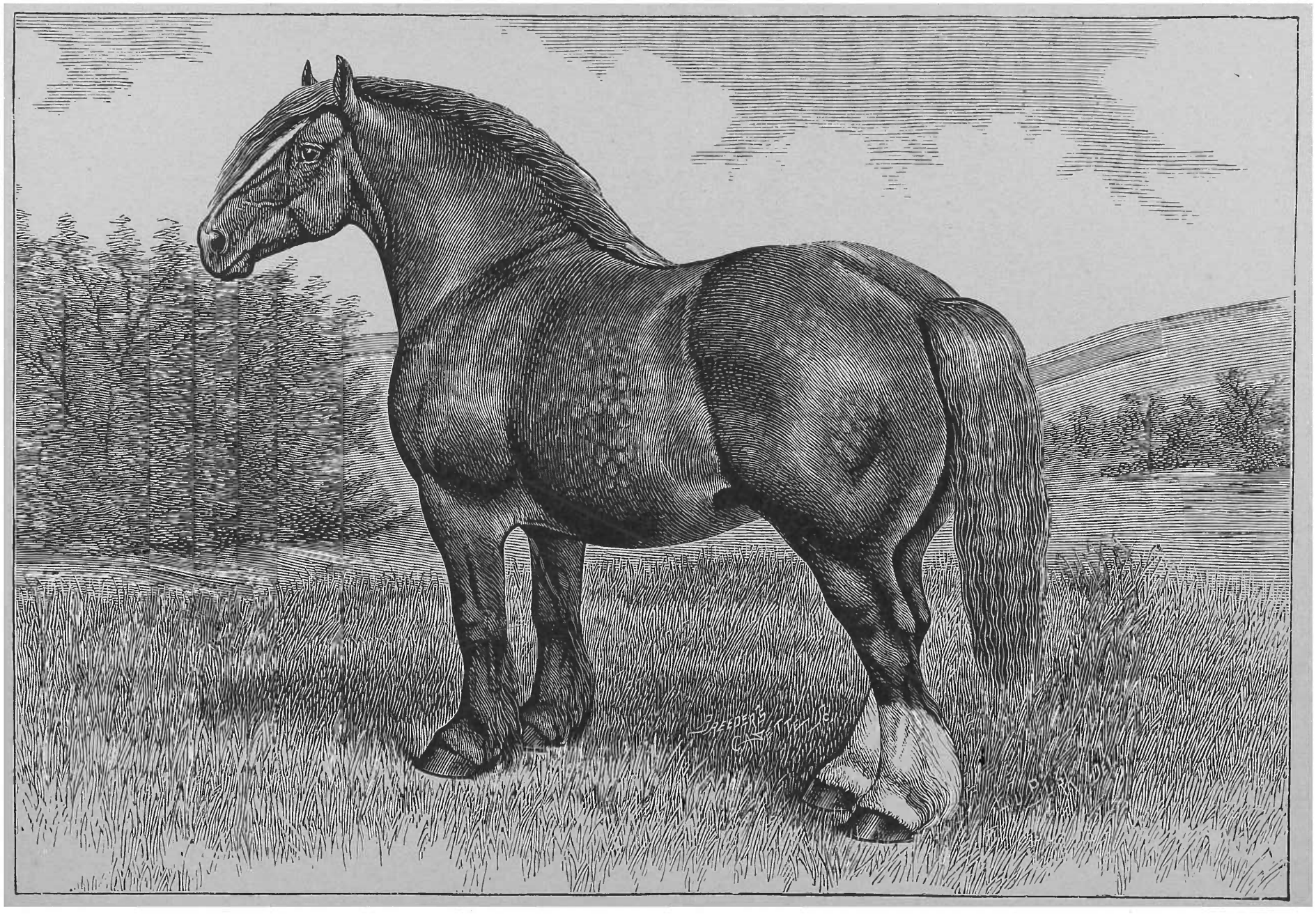
ENGLISH SHIRE HORSE HONEST TOM (1105).

Color, bay with white markings, as shown in the engraving; foaled 1865; got by Thumper (2123), son of Thumper (2119); dam Beauty by Emperor (688), son of Matchless (1509). Bred by William Welcher, and owned for several years prior to his death, which occurred Feb. 25, 1885, by Thomas Horrocks Miller, of Lancashire, England. This was, without doubt, one of the most famous stallions of his breed ever produced in England, he having been accorded first prize at the Royal Agricultural Society's Show six years in succession, beginning when he was two years old. His weight in show condition is stated to have been about 2,200 lbs., and his hight was 17½ hands. Our engraving was made from a photograph kindly sent us by Mr. G. M. Sexton, for several years editor of the English Shire Horse Stud Book.



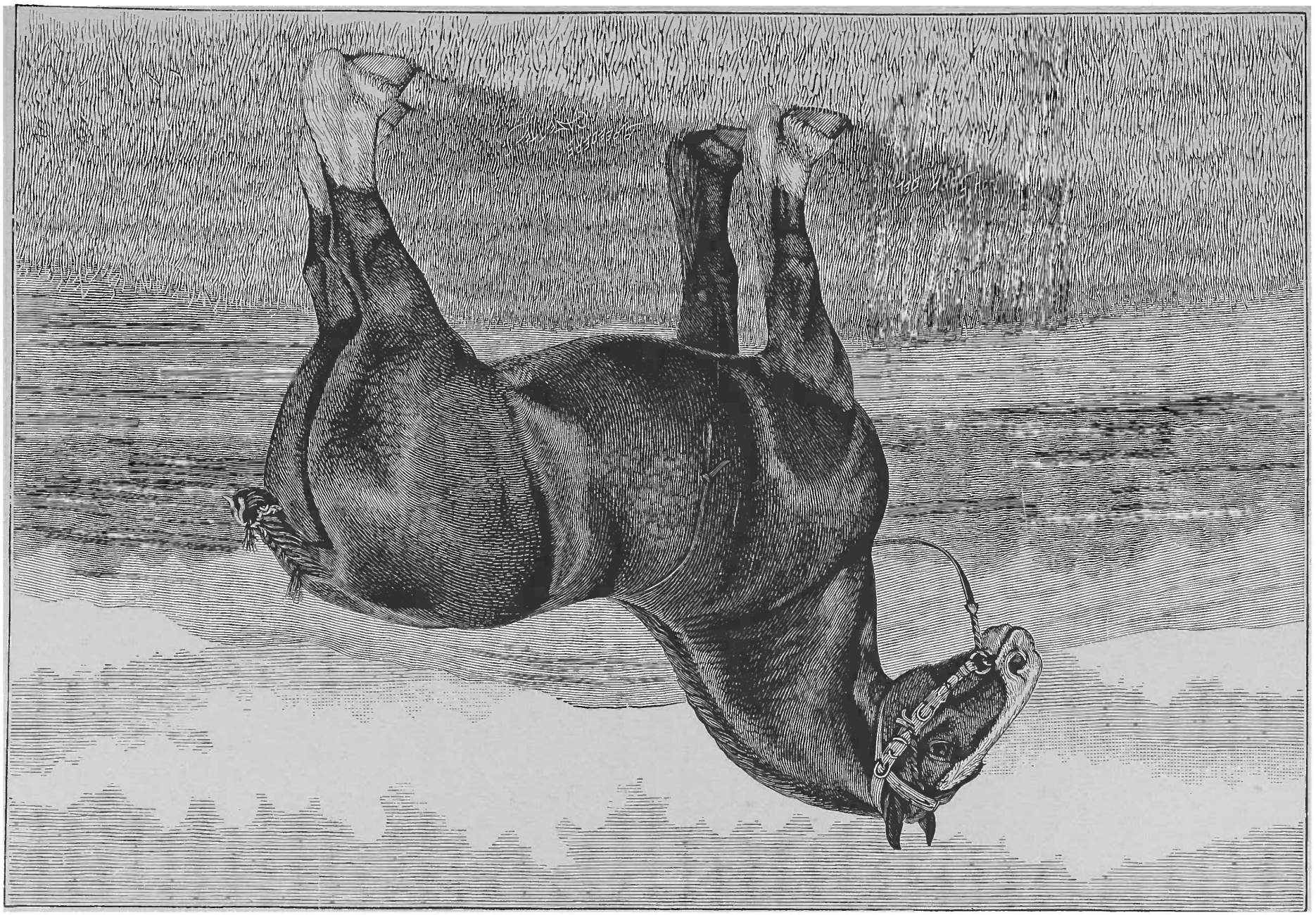
ENGLISH SHIRE HORSE BEAU NASH (2978).

Color, brown; foaled 1881; got by Beau Chief (116), son of Devonshire Lad (595); dam Cardiff Lass by Britain (261). Bred by Mr. George Street, of Bedford, England; imported 1885 by Galbraith Bros., of Janesville, Wis.; owned by M. Burke, Carlinville, Ill. Beau Nash had an almost unbroken series of victories in the show ring at the leading fairs of 1885, winning among other prizes the highest honors at the Illinois State Fair of that year. Engraved after a sketch by Burk taken when the horse was four years old.



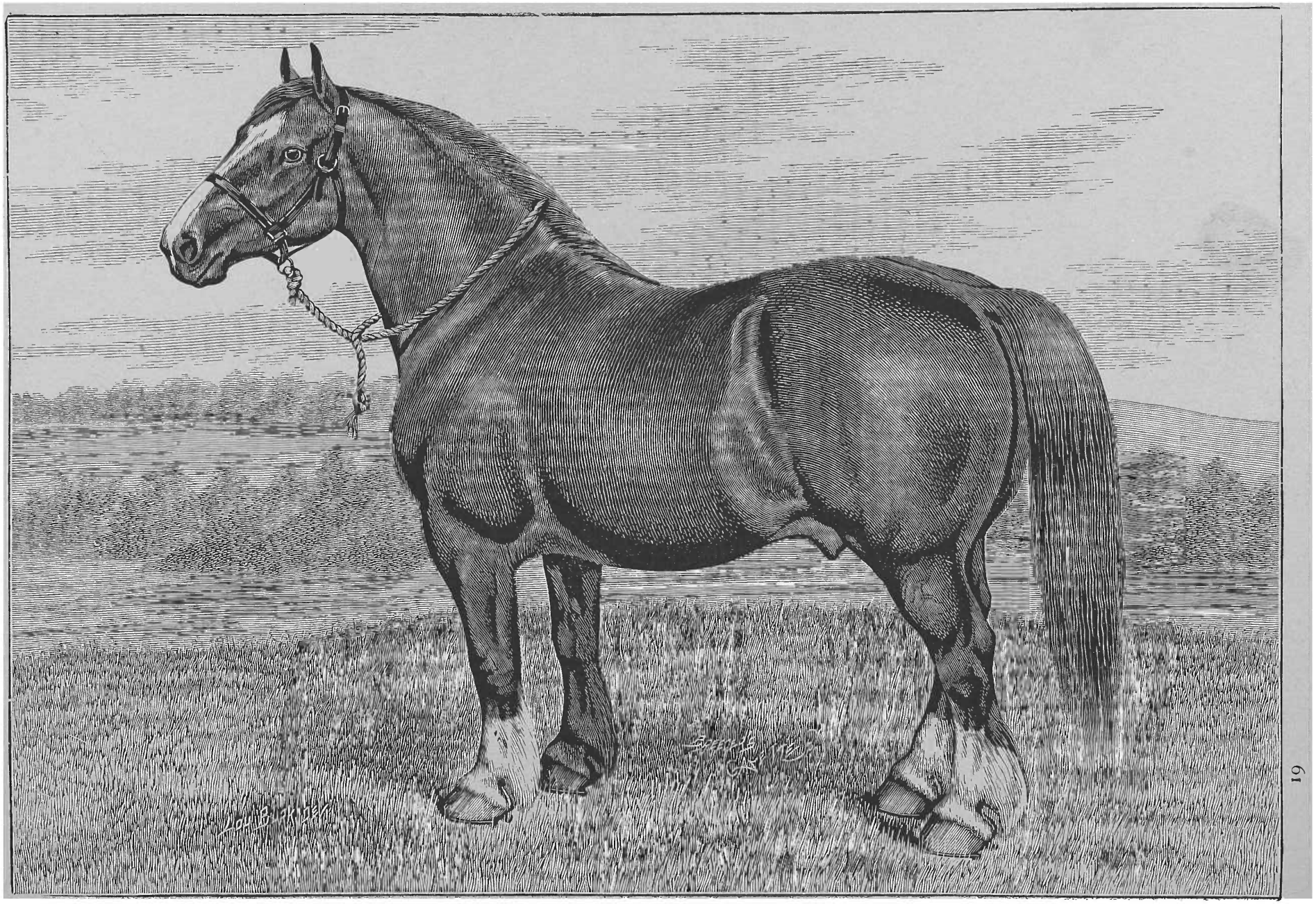
ENGLISH SHIRE HORSE MASHER (3218).

Color, bay; foaled 1882; got by Honest Tom (1105) [see page 138], dam Trimmer by Emperor (692), son of Emperor (688); 2d dam by England's Glory (733). Bred by T. H. Miller, Lancashire, England; imported 1886, and owned by Burgess Bros., Wenona, Ill. He was shown with great success at the leading Western fairs of 1886, and won among other honors the first prize in the four-year-old class at the show of the American Shire-Horse Breeders' Association in Chicago. Engraved after a sketch from life by Burk, showing the horse as he appeared immediately after importation.



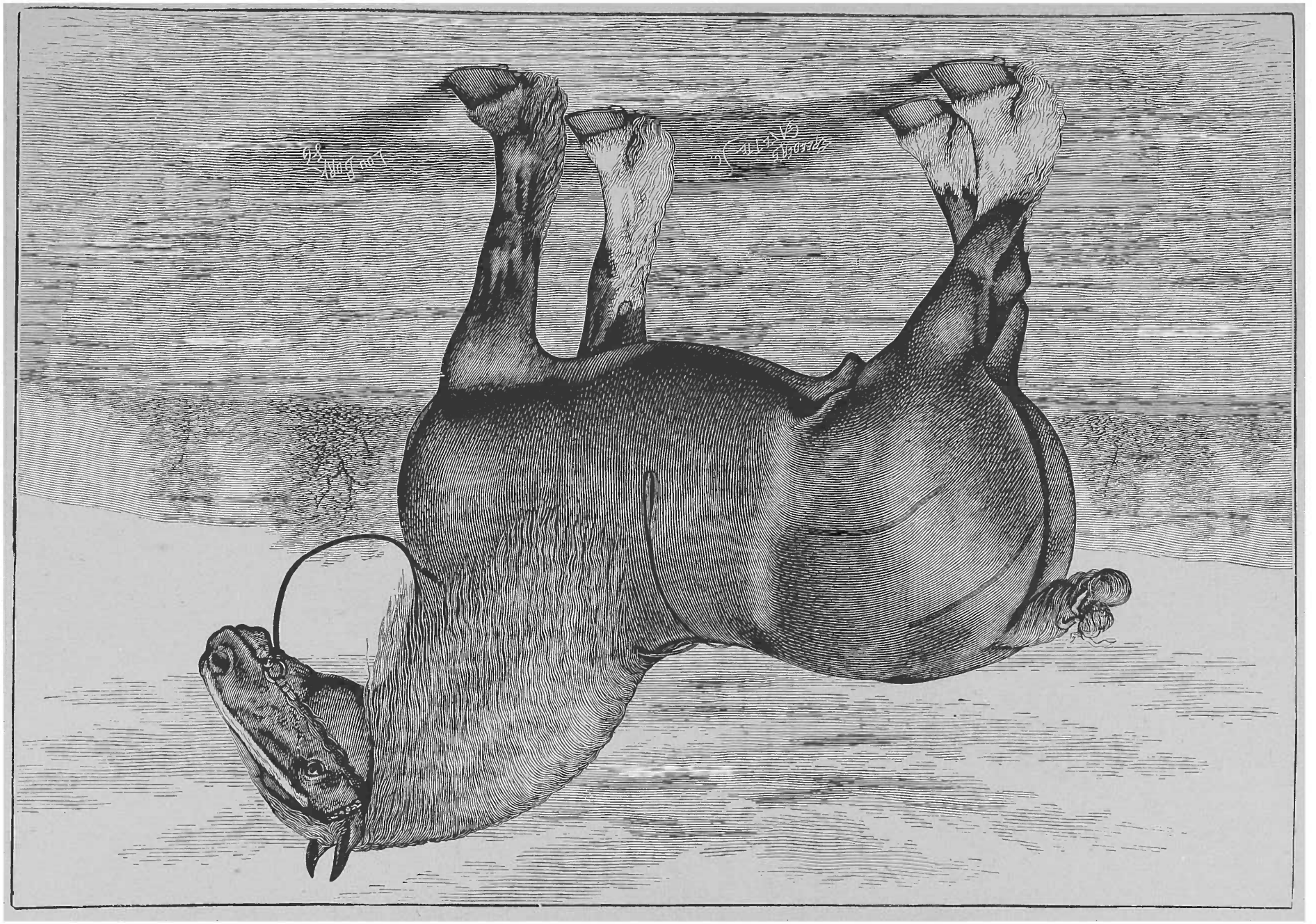
ENGLISH SHIRE HORSE HOLLAND MAJOR (3135).

Color, bay; foaled 1882; got by Right Sort (2483), he by Wilson's Noble; dam Kingston Smart by Shakespeare (2000). Bred by the Earl of Warwick, Warwickshire, England; imported and owned by George E. Brown, Aurora, Ill. Holland Major has been shown with very great success at prominent Western fairs since his importation, and has won several very important sweepstakes prizes, among his winnings being the *Breeder's Gazette* Gold Medal for best English Shire stallion four years old or over, at the American Horse Show at Chicago, November, 1886. He is the premier sire in use in the extensive breeding herd of his present owner.



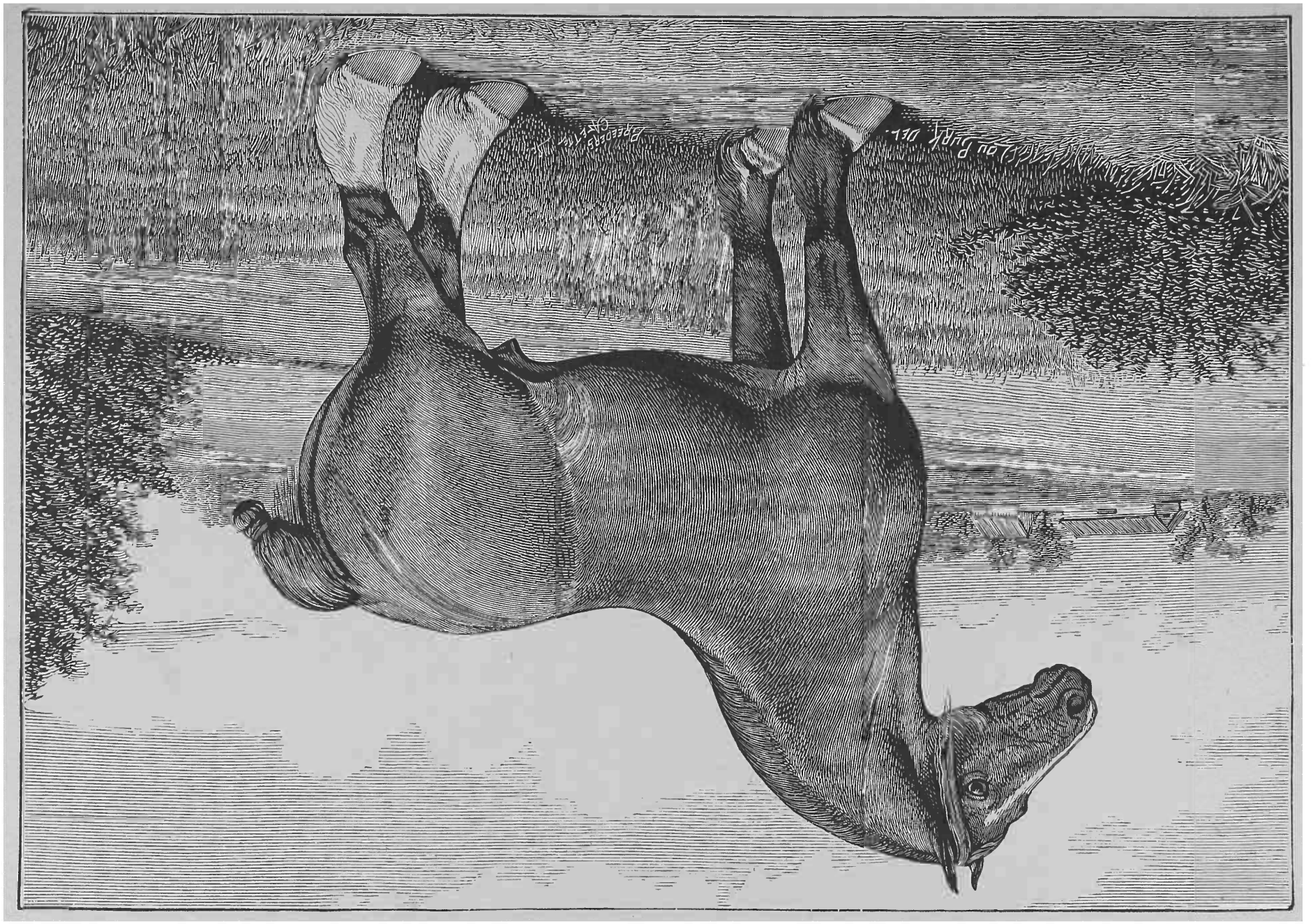
ENGLISH SHIRE HORSE BLYTH BEN (4239).

Color, gray; foaled 1883; got by Kempston (3163), son of Em peror 2d (2769); dam by Thumper (2136), son of Waxwork (2298). Bred by J. Osborn Daintree, Cambridgeshire, England; imported 1886, and owned by Galbraith Bros., Janesville, Wis. This horse was by long odds the most successful three-year-old Shire horse that was shown in America for the year 1886. At the great Chicago Show of that year he won three first prizes, among them being the sweepstakes of the Shire-Horse Breeders' Association for best stallion of any age. Engraved from a sketch by Burk, showing the horse at three years old.



ENGLISH SHIRE HORSE BEN LOMOND.

Color, steel-gray; foaled 1881; got by Big Ben (Harrison's), son of Forshaw's Ben Lomond; dam Shy Nottingham by Bold Lincoln (231); 2d dam Flower by Brown Tom (343). Bred by George Harrison, of Nottinghamshire, England; imported 1883 by Burgess Bros., Winona, Ill., and owned by T. J. Patterson, Farm Ridge, Ill. Engraved from a sketch made by Burk September, 1883. Among other prizes Ben Lomond won first in the three-year-old ring for Clydesdale and Shire horses at the Illinois State Fair of 1884.



CHAPTER VI.

CLYDESDALE HORSES.

To recount the origin of the Clydesdale breed, now so popular and so extensively diffused throughout the United States, would simply be to recapitulate much of what has been written in the preceding pages concerning the origin of the draft breeds of England, for they have been evolved from the same original stock and by substantially the same course of selection and breeding. We have the same origin for both breeds in the great Black horse breed of Flanders. We hear of their introduction first in Lanarkshire, the original home of the Clydesdale breed, when William, Earl of Douglas (one of the ancestors of the Duke of Hamilton, who in later years became so famous as a breeder of Clydesdales), obtained an especial edict of "safe conduct" from King Edward I to take "ten grooms and ten large horses from certain places in Scotland to certain places in Teviotdale in the King's dominions." This safe conduct was issued July 1, 1352, and is the earliest positive mention we have of great horses in Scotland. The editor of the Clydesdale Stud Book, commenting on this document, says:

"Unfortunately it does not say where the horses came from; but as Baliol held the Douglas estates it would appear as though they were to be taken from Lanarkshire into Teviotdale, then in posses-

sion of the English. Douglas' quarrel with his kinsman, William of Douglas, the Knight of Liddesdale, whom he slew, taking possession of his estates; his rupture with King Edward of England, and his turning of Baliol out of the ancestral estates of the Douglas family in Liddesdale, Annandale and Clydesdale, leave little room for doubt that, if large horses did not exist in Lanarkshire previous to this date, as the extensive trade done with Flanders by the Scottish merchants leads us to believe they did, some, if not all, of the Black stallions found their way to Douglas Castle, in the Upper Ward of Lanarkshire."—(Clydesdale Stud Book, Vol. II, p. xvi.)

Scotch authorities generally concur in naming the Upper Ward of Lanarkshire as the place where the Clydesdale breed was first brought to any considerable degree of perfection, and in the "Retrospective Volume" (Vol. I) of the Clydesdale Stud Book it is stated that:

"Some time between 1715 and 1720 John Paterson, of Lochlyoch, on the estate and in the parish of Carmichael, grandson of one John Paterson, who died at Lochlyoch in 1682, went to England and brought from thence a Flemish stallion, which is said to have so greatly improved the breed in the Upper Ward as to have made them noted all over Scotland. The Lochlyoch mares were famous in the Upper Ward during the latter half of the last and the first two decades of the present century; and a Mrs. Paterson, of Lochlyoch, mother of the present tenant of Drumalbin, now ninety-seven years of age, still has recollection of a noted black mare from which many of the best stock in the Upper Ward are descended. The family tradition is strongly supported by the fact that the Patersons were in the habit of noting down important agricultural items from

a very early period; and the present representative of the family, Mr. Paterson, of Drumalbin, has in his possession a family tree of all the descendants of that John Paterson who died in 1682. In the year 1836, in reference to a day's plowing given to one of the Patersons on leaving Lochlyoch for Drumalbin, the following remarks appeared in an Edinburgh newspaper, from which it will be seen that their claim to being the founders of the breed was then recognized. After descanting on the merits of the family and kindred topics, the writer proceeds: 'And it may be here worthy of remark, that it was a brother of Mr. Paterson's grandfather who brought the notable stallion from England to Lanarkshire—the sire of the famous Clydesdale breed of horses of which the county has been so long and justly proud.'

"What were the distinguishing features of the native breed previous to the introduction of the Flemish horse, about 1715, cannot now be definitely determined, but there can be little doubt that they were mostly of English origin, and of a mixed character. The old "drove road" from Scotland to England crosses the Clyde at Hyndford Bridge, and leads across the hills by Carmichael and Crawfordjohn—the very center of the then horse-breeding district; and the intercourse which the farmers would thus have with their neighbors from the south, and the amount of traffic done by pack-horses, would doubtless allow of many opportunities for selecting animals calculated to improve the breed.

"Lochlyoch mares were generally browns and blacks, with white faces and a little white on their legs; they had gray hairs in their tails, occasional gray hairs over their bodies, and invariably a white spot on their belly, this latter being recognized as a mark of dis-

tinct purity of blood. The mares died out at Lochlyoch about thirty years ago.

"The Lochlyoch stock having been long noted in the Upper Ward and largely drawn upon by breeders, there is no doubt that to them, or, more correctly, to the black horse of 1715, the Clydesdale horse owes its present distinctive character."—(Clydesdale Stud Book, Vol. I, p. xvii.)

There can be no question as to the fact that there has been an almost constant mingling of the blood of the Shire or Cart horse of England with that of the Clydesdale of Scotland, and that at the present day the differences between the two breeds are so very slight that many intelligent breeders of both England and Scotland have urged, and continue to urge, that they should be classed as a single breed, and that but one stud book should be maintained for them. It is a well-known fact that the "English cross" can be clearly traced in the pedigrees of some of the most successful prize-winners and sires of Scotland. In 1877 the Clydesdale Society of Great Britain and Ireland was formed, and the compilation of the Clydesdale Stud Book was at once begun. The work has been vigorously followed up until eight volumes have been issued. This fact, taken in connection with the organization of the English Cart-Horse Society and the publication of its stud book, clearly indicates that the lines are to be more closely drawn hereafter, and that henceforth crossing between the heavy horses of England and Scotland will not be regarded with favor.

Modern Clydesdales are of all colors, bays, browns and blacks predominating, although there are some grays and chestnuts, while white markings on face, feet and legs are quite common with all

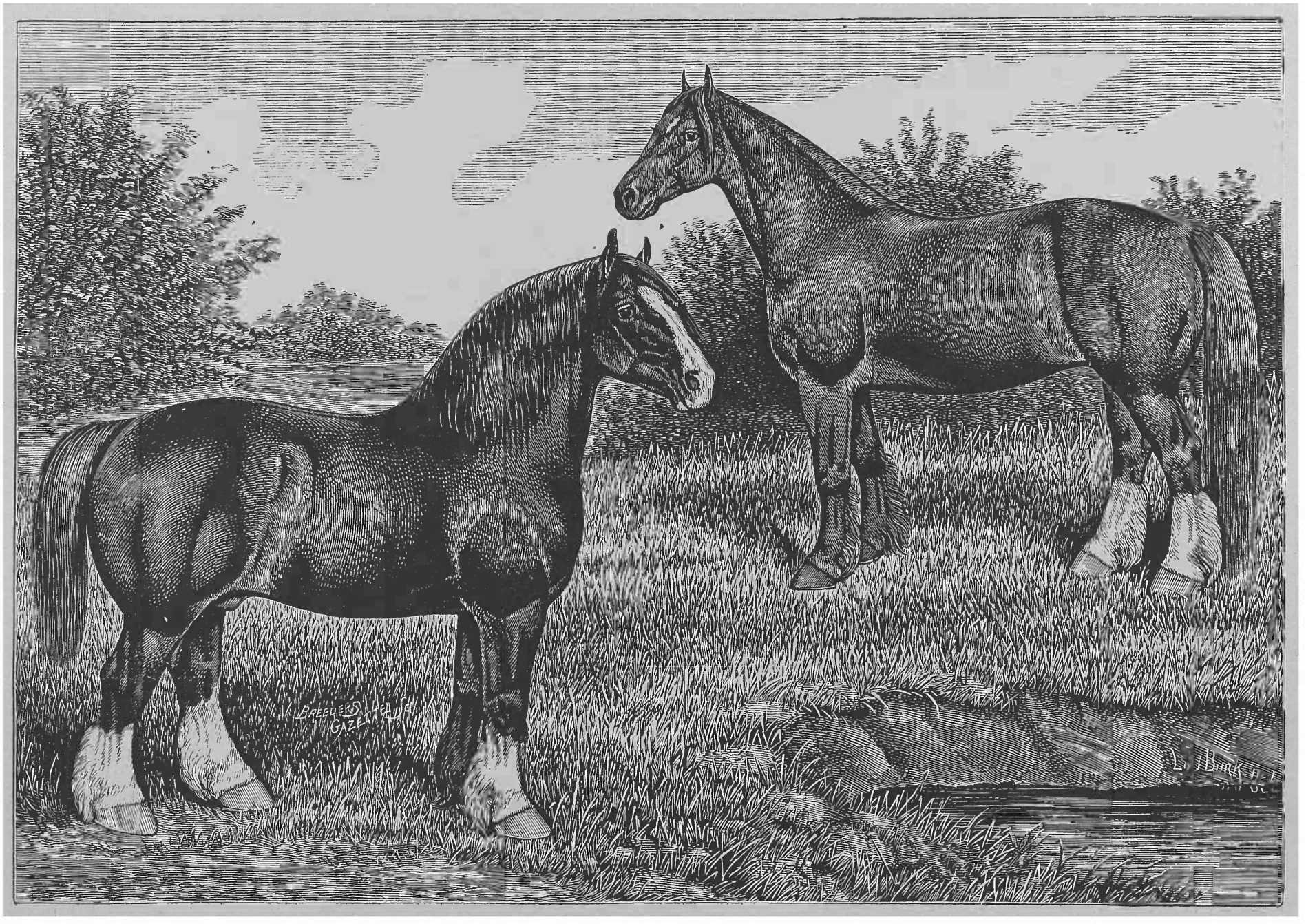
the colors; and, as with the Shire horse, the presence of a heavy growth of long, silky hair from the knee and hock to fetlock is regarded as a mark of quality and good blood. They have been extensively imported into the United States and Canada, and have exercised a very powerful influence upon the horse stock of our country. No other breed of draft horses, saving the Percherons, has been so extensively introduced, and between these two breeds the contest for popular favor has been waged upon very nearly equal terms for several years past. The question of color has always been a strong point in favor of the Clydesdales with American breeders as against their French rivals, the latter being usually gray, while with the former dark colors are the prevailing ones.

The Clydesdale Society of America was organized in 1879. The first volume of the American Clydesdale Stud Book was issued in 1882, and Vol. II of the work followed early in 1885. Col. Charles F. Mills, of Springfield, Ill., has been Secretary of the Society from its organization, and has done a valuable service to the Clydesdale interest in America by compiling the records of the early importations and preparing for publication the two volumes of the Stud Book that have been issued. The rules governing entries require that American-bred stallions and mares must trace to recorded sires or dams, or have four or five recorded top crosses, respectively, and in case of importation to be recorded in the Clydesdale Stud Book of Great Britain and Ireland.

CLYDESDALE HORSE PRINCE GEORGE OF WALES 933, AND CLYDESDALE MARE MUSIC (4622).

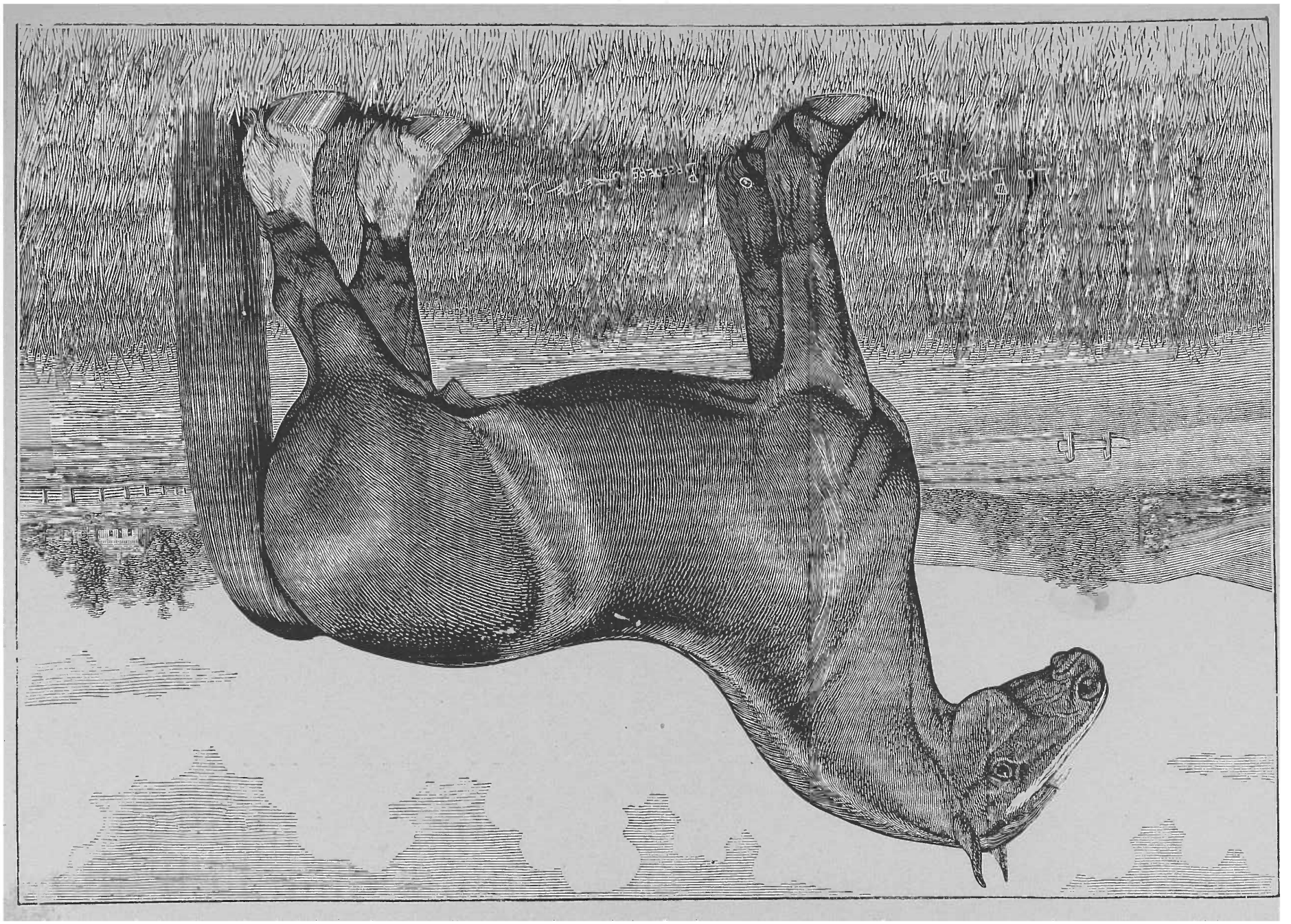
PRINCE GEORGE OF WALES.—Color, black; foaled 1876; got by Prince of Wales (673), dam Jessie Brown. Bred by Lawrence Drew, of Scotland; imported by Galbraith Bros., Janesville, Wis., August, 1882. Very few Clydesdale stallions have acquired equal celebrity with Prince of Wales (673), and his son Prince George, as above, was shown with great success at many of the leading fairs of 1883 and 1885.

MUSIC.—Color, bay; foaled 1880; got by Lord Lyon (489); dam Whitley's Jess. Bred by Mr. Hunter, Stranraer, Scotland; imported and still owned by Galbraith Bros., Janesville, Wis. Music gained very high honors as a yearling before her importation, and has five times carried off first honors at various Western State fairs since 1882. Engraved from a sketch by Burk, showing the horse at six and the mare at two years old.


BREEDERS GAZETTE

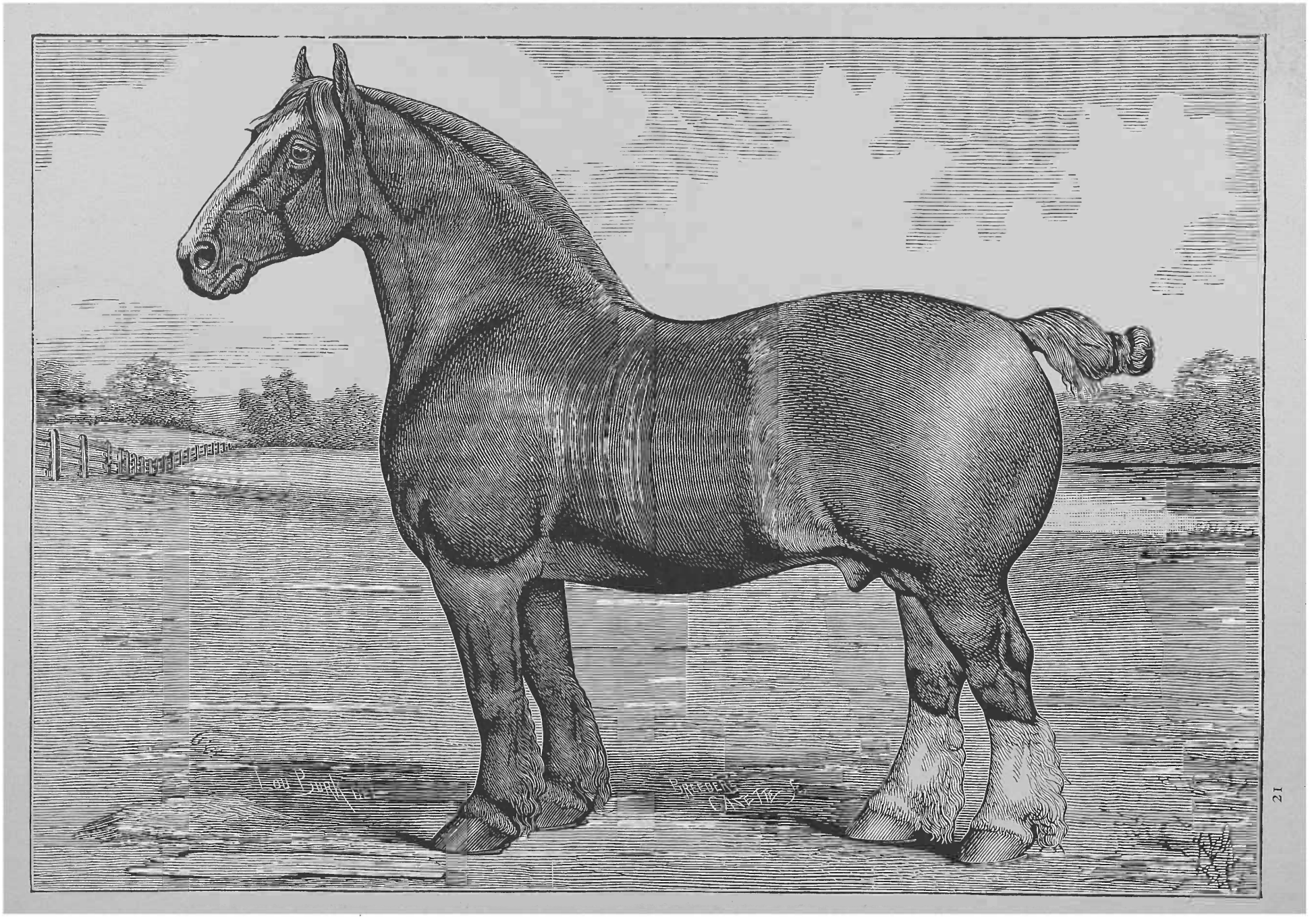
CLYDESDALE HORSE BIDE A WEE.

Color, bay; foaled 1881; got by Druid (1120), dam Nanny 2d by Farmer (284); 2d dam Nanny by Lochfergus Champion (449). Bred by James Milroy, Galdenoch, Stranraer, Scotland; imported and owned by Robert Holloway, Alexis, Ill. Engraved after a sketch from life by Burk, showing the horse at three years old. Most American breeders of Clydesdales will remember the purchase of the celebrated Clydesdale champion Druid, in August, 1881, and his sudden and unexpected death in Chicago in September following, before he had reached Col. Holloway's stables. He was confessedly the grandest Clydesdale stallion of his day, as his series of victories at the Highland Society's Show in 1878, 1879, and 1880, and at the Royal in 1879, amply attest. Bide a Wee is particularly rich in the Victor blood, which entered largely into the pedigree of Druid, and has given to the Scotch show yards so great a proportion of winners.



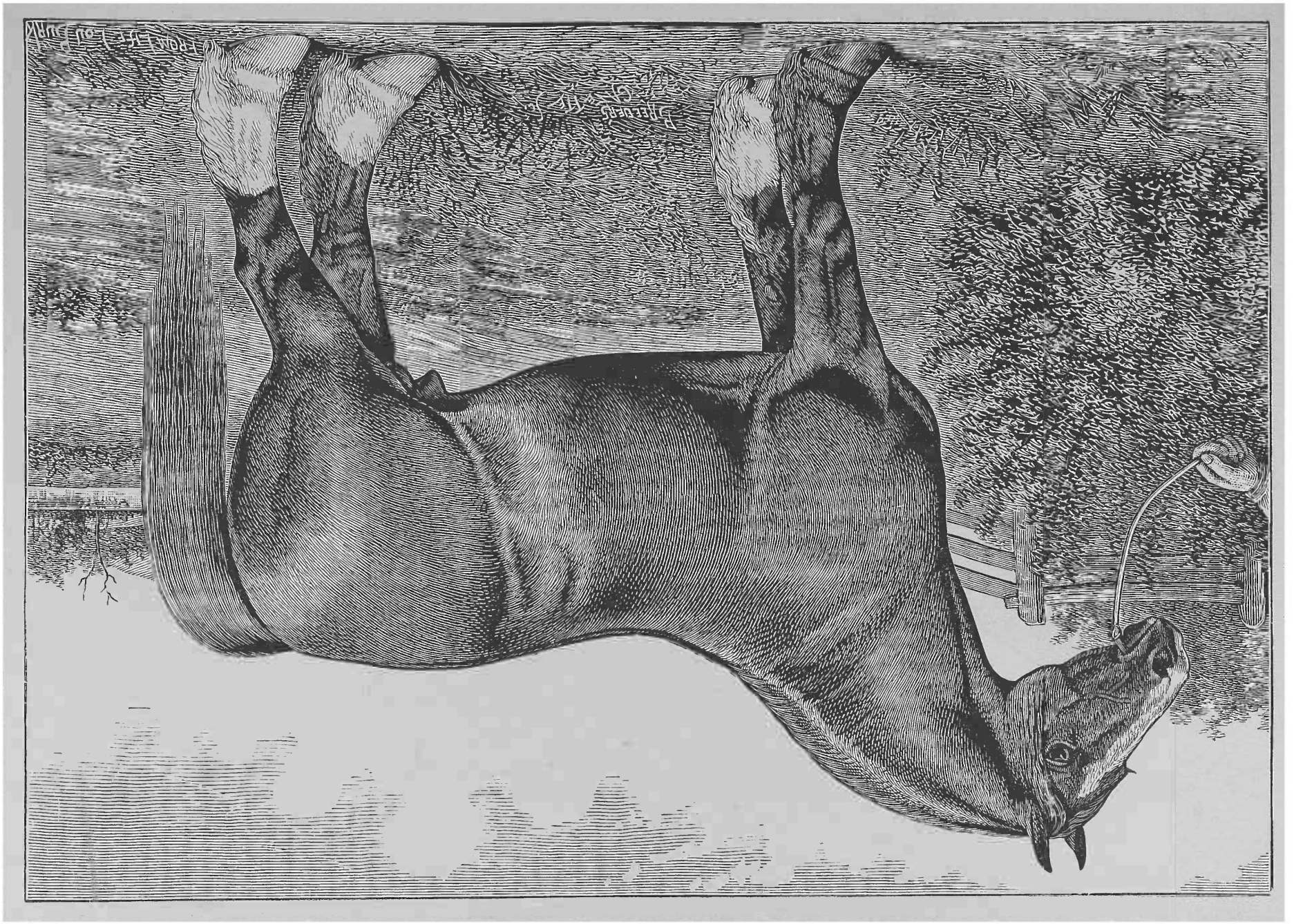
CLYDESDALE HORSE DARLING'S PRINCE.

Color, bay; foaled 1882; got by Prince Imperial (1258), son of Dandy Jim (221); dam Darling 2d 52 by Netherby (1496); 2d dam Darling (500) by Young Clyde. Bred and owned by James I. Davidson, Balsam, Ont. Engraved from a sketch by Burk taken when the horse was only two years old. The Darling family, from which this horse is descended, is very highly prized among Clydesdale breeders of this country, very few families of the breed having attained equal celebrity, either in the United States or Canada.



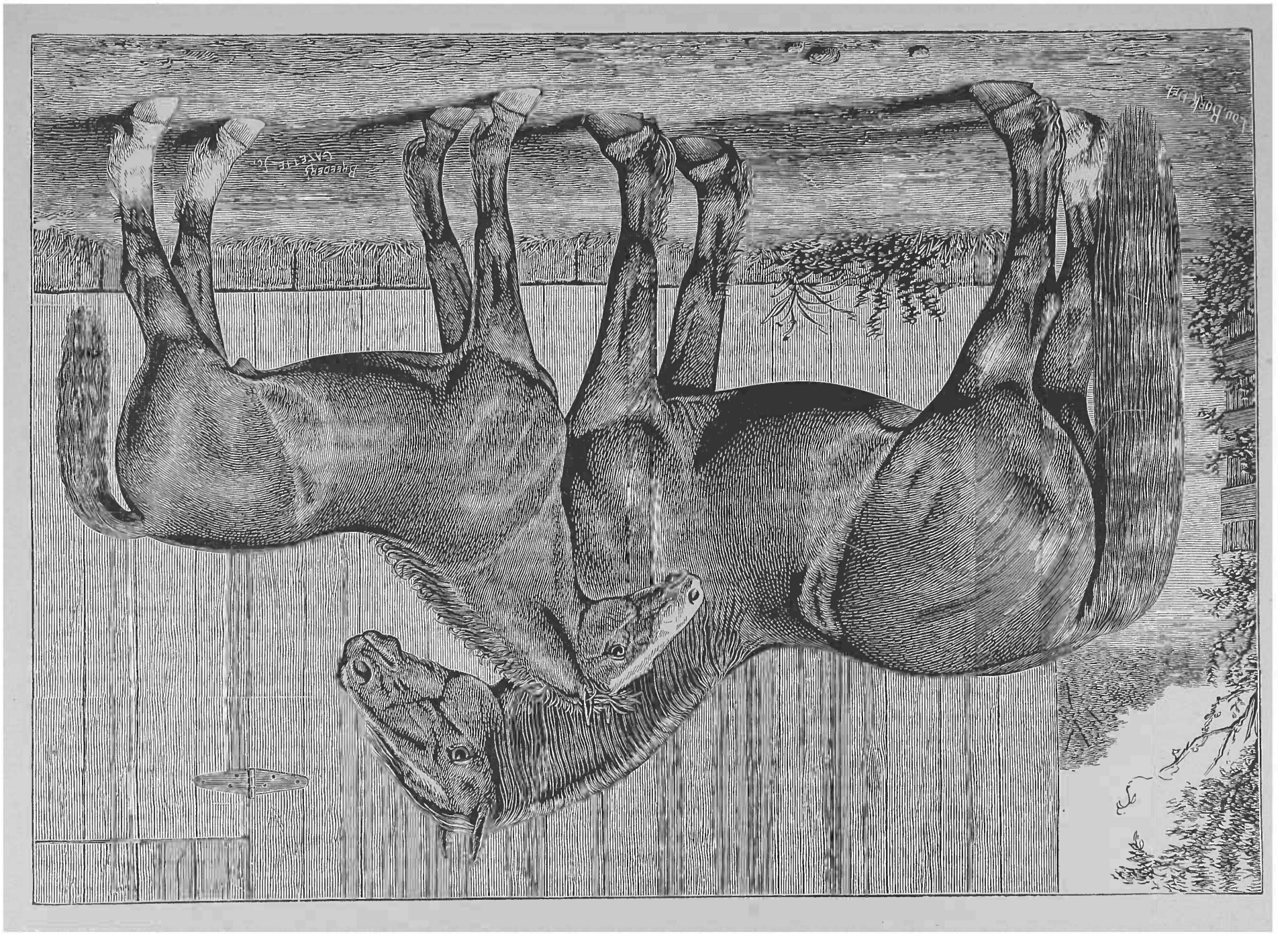
CLYDESDALE HORSE TURN O' LUCK 1825.

Color, bay; foaled 1880; got by Blantyre (1068), son of Time o' Day (875); dam Bet (2979) by Young Baronet (919); 2d dam Betsy by Dainty Davie (211). Bred by John Loutar, Kirriemuir, Scotland; imported and owned by John C. Huston, Blandinsville, Ill. Engraved after a sketch taken by Burk when the horse was four years old.



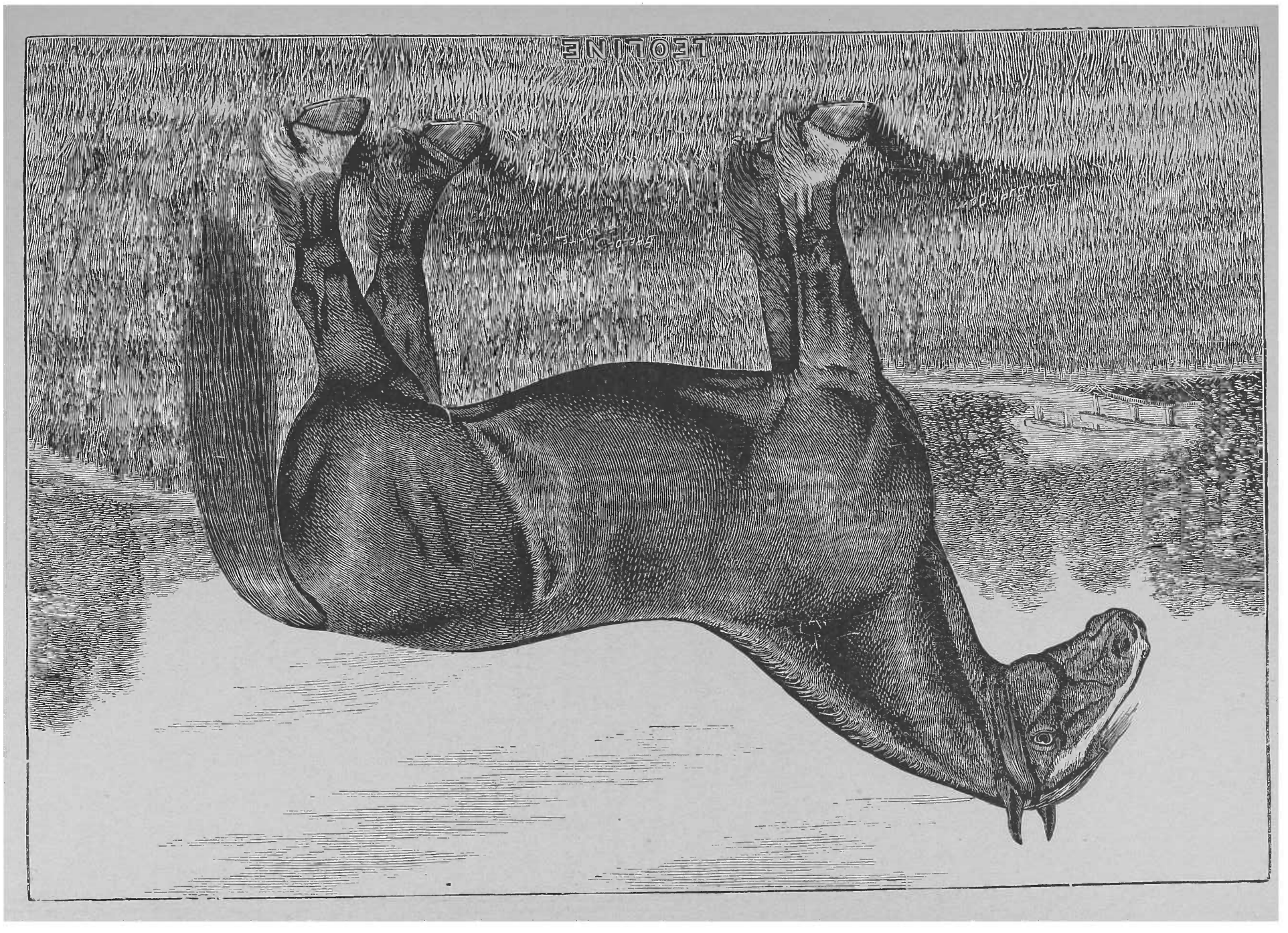
CLYDESDALE MARE DARLING 12TH AND FOAL.

Color, bay; foaled 1878; got by Lochleven (1186), son of Champion (1089); dam Darling 6th by Scotland's Pride; 2d dam Darling 3d by Netherby (1494). Bred and owned by Moffat Bros., Paw Paw, Ill. The foal is by Johnnie Lad 1445. Engraved after a sketch from life by Burk, taken when the mare was four years and the foal six months old. They belong to the same Darling family as Mr. Davidson's Darling Prince, on page 159—a family that justly stands in very high favor among Clydesdale breeders.



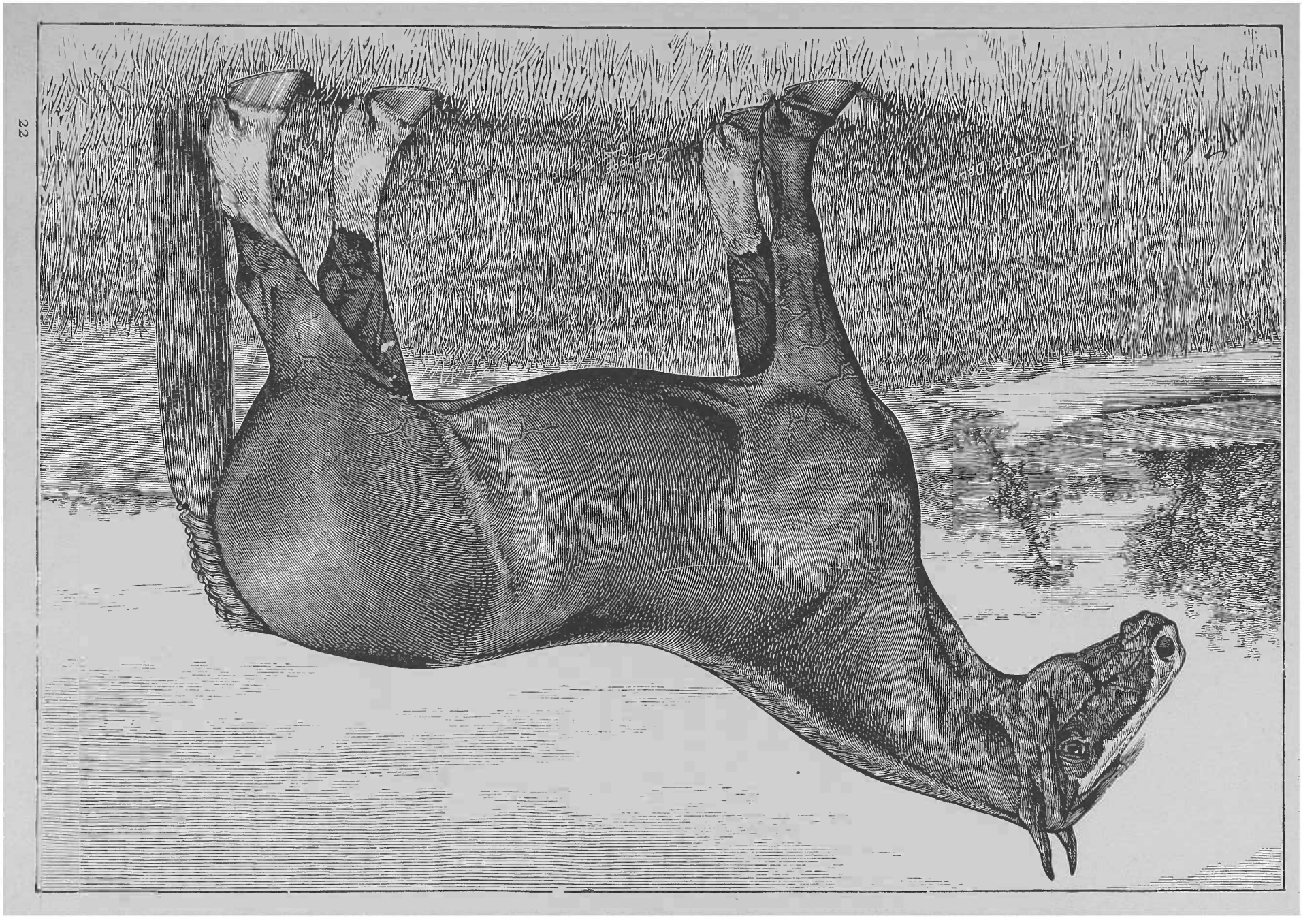
CLYDESDALE MARE LEOLINE (695).

Color, bay; foaled 1876; got by Paisley Jock (581), son of Conqueror (196); dam Maggie by Young Garibaldi (972). Bred by Donald McKinnon, Poteath, Scotland; imported and owned by the Door Prairie Live-Stock Association, Door Village, Ind. Has repeatedly carried off the highest honors at leading shows on both sides of the Atlantic, including Indiana State Fairs of 1882 and 1884, Michigan and Illinois State Fairs, and National Clydesdale Show of 1884. Engraved from a sketch by Burk taken when she was six years old.


LEOLINE

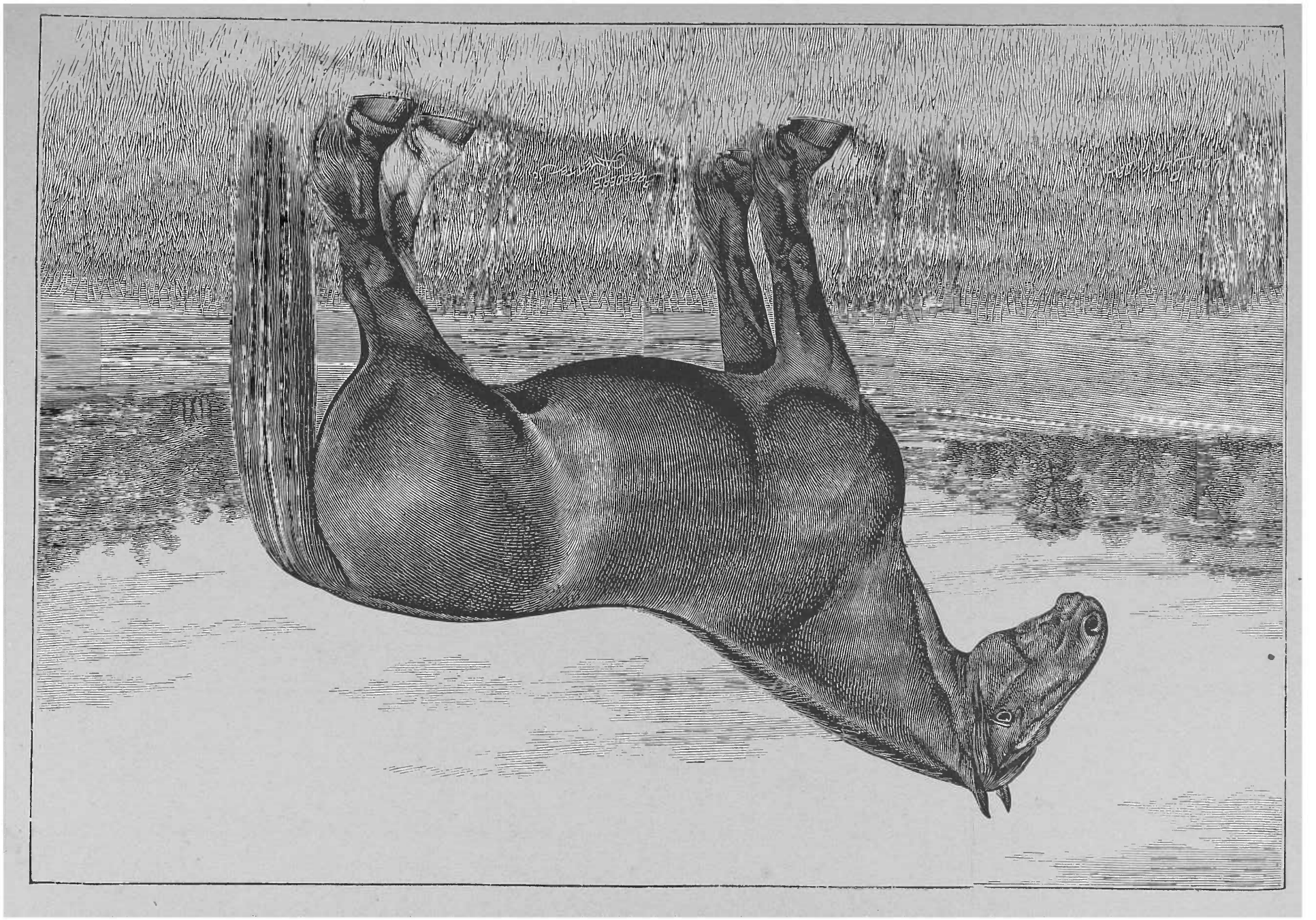
CLYDESDALE MARE PRINCESS 1569.

Color, bay; foaled 1882; got by Blue Ribbon (1961), son of Darnley (222); dam Jean of Skaith (2624) by Abbey Prince (2); 2d dam Bell of Skaith by Prince Charlie (625). Bred by Samuel McCulloch, Skaith, Newton-Stewart, Scotland; imported and owned by Robert Holloway, Alexis, Ill. Has been greatly distinguished as a prize-winner at leading Western fairs. Engraved from a sketch by Burk, taken September, 1884.



CLYDESDALE MARE LADY OF THE LAKE 521.

Color, brown; foaled 1880; got by Young Blane 518, son of Blane (76); dam Maggie by Largs Jock (444), son of Old Clyde (574). Bred by Robert Barbour, South Kilruskin, West Kilbride, Scotland; imported 1881, and owned by Galbraith Bros., Janesville, Wis. Has been one of the most famous prize-winners of her class ever owned in America. Engraved after a sketch from life by Burk.



CHAPTER VII.

PERCHERON HORSES.

The Percheron is an ancient French breed, originally famed for its capacity for rapid locomotion with a heavy load, and especially adapted to drawing the heavy diligences or post-coaches used in France before the days of the railway and locomotive. Tradition has long attributed to the Percheron — confessedly among the most active and powerful of the heavy breeds of the European Continent — an Oriental origin; but it was not until the researches recently made in the compilation of pedigrees for the first volume of the Percheron Stud Book of France that the extent to which the blood of the Orient had entered into the formation of the Percheron race was fully realized. What the Darley Arabian was to the English Thoroughbred, and the Gray Arabian Smetanxa to the Orloff, the Gray Arabian Gallipoli appears to have been to the Percheron horse of France. Diligent and persistent inquiry into the family records and traditions of the best breeders of Le Perche has enabled the compiler of the Percheron Stud Book of France to trace definitely a large proportion of the most noted Percheron horses of modern times to this Arabian sire, that was imported about 1820. In fact, this Oriental blood, wherever introduced, in all nations and all climates, has been a powerful factor in effecting improvement in the

equine race. There is every reason to believe that the Percheron, like the draft breeds of England and Scotland, derived its size originally from the large Black horse breed of Flanders; but from the fact that gray has for many generations been the prevailing color it is evident that some very powerful agency has been at work, modifying the type until it has but little in common with this old parent stock except size, and this agency has undoubtedly been the large admixture of the blood of the Arab, and from this source the prevailing gray color is derived.

Aside from the history and traditions of the country the Percheron horse himself furnishes unmistakable evidence, in his form, disposition, color and general chacacteristics, that he is closely allied to the Arab. These characteristics have been materially modified, it is true, and the size has been greatly increased; but, in the hands of the excellent horsemen of Le Perche, and under the careful and fostering supervision of the Government, which exercised a direct control over the selection of sires, he seems to have retained many of the excellent qualities of his Oriental ancestry; and this, added to the greatly increased size which had been attained, made the horses of Le Perche many years ago the wonder of the world for their specialty of rapid draft—their ability to move a heavy load at a rapid gait.

The Percheron is chiefly bred in the departments of Eure, Orne, Eure et Loir, Loir et Cher, and Sarthe; and they have also found their way further north and toward the sea coast in the departments of Seine-Inferieure and Calvados, embracing almost the entire ancient province of Normandy; but nowhere are they found so purely bred, and so nearly allied to the original Percheron type, as in the five

departments first above mentioned—their original home. In that part of Normandy contiguous to the coast, especially north of the Seine river, the Flemish element seems to have made its influence more strongly felt, and there the horses possess more of the Flemish and less of the Percheron characteristics than those bred farther south, in the heart of Le Perche; which will account for the diversity in the character of the horses brought to this country by our importers. Those who have purchased near the coast, or north of the river Seine, have usually obtained horses that leaned strongly toward the Flemish type. They are larger, coarser and more sluggish, with less energy, endurance and action, than those bred in Eure et Loir and the adjacent departments. They are better adapted to heavy draft purposes than their lighter, but more hardy, active and stylish relatives of the interior, frequently weighing from 1,700 to 2,000 pounds in high flesh, and producing larger horses when crossed upon our common stock.

Horses of this breed, as well as those of mixed and unknown blood, and from different parts of France, have been extensively imported into the United States, and have been variously known as Percherons, Percheron-Normans, Norman-Percherons, Normans and French horses; and this multiplicity of names, which is very perplexing to the uninitiated, has led to no small amount of controversy. A society for the purpose of securing the publication of a stud book for this breed was organized in February, 1876, and the first volume of its stud book appeared in September of the same year. This Society has the honor of being the oldest draft-horse breeders' association in existence; and its stud book, of which three volumes have been published, ante-dates all other draft-horse stud books. The com-

pound Percheron-Norman was adopted by this Society as a compromise name at its annual meeting in February, 1878.

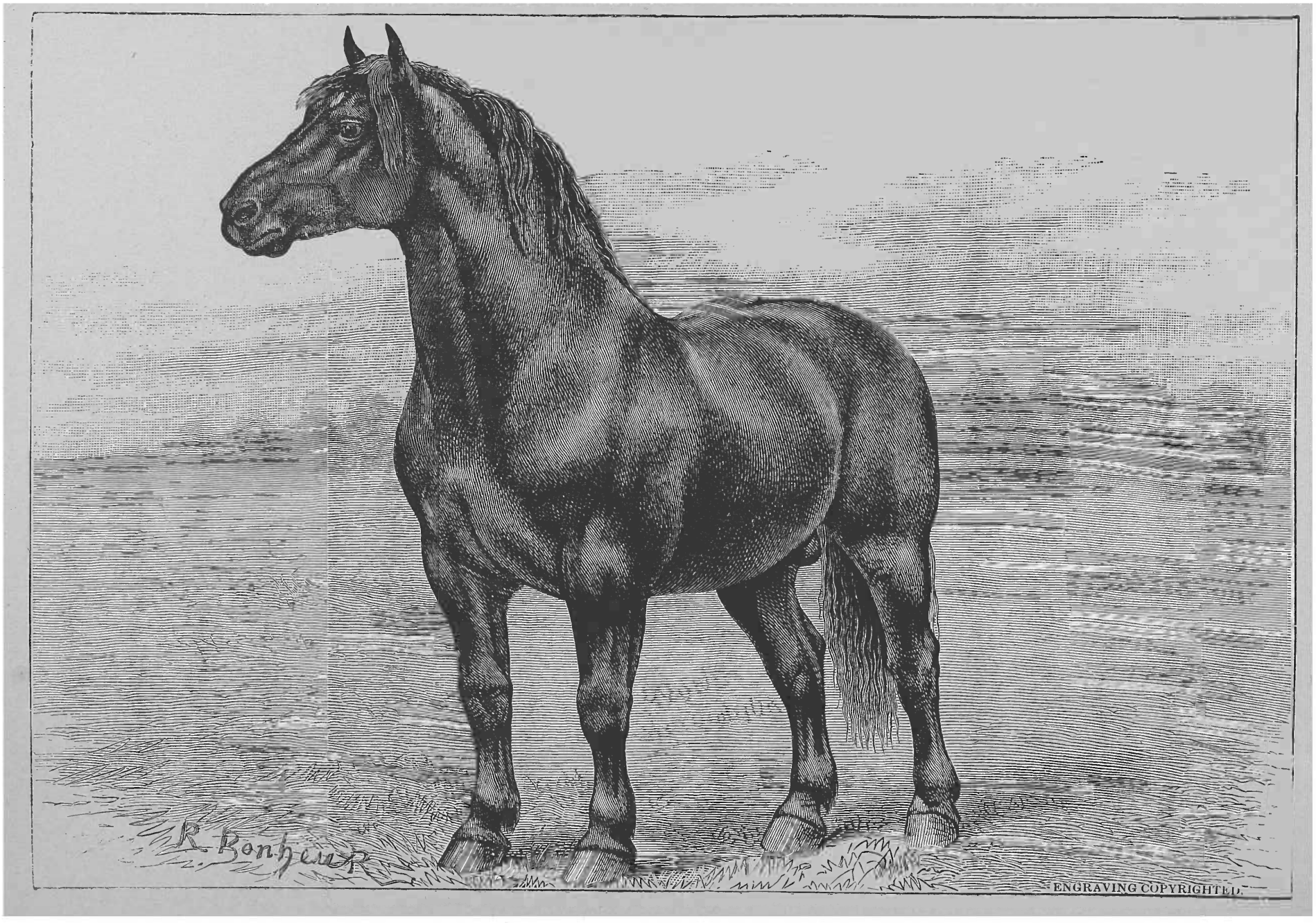
But very few were satisfied with the unwieldy compound. People continued to call them Percherons, French horses, or Normans, as habit dictated, and the confusion continued as great as ever, until the organization of the Société Hippique Percheronne in France, in July, 1883, and the publication of a Percheron Stud Book in that country furnished an easy solution of the difficulty; and the American Society at its next meeting thereafter, held in November, 1883, wisely decided to adopt and adhere to the only name by which the breed is recognized in its native country. At this meeting it was also ordered that no animals imported after Jan. 1, 1884, should be recorded in the Stud Book of the Society unless previously recorded in the Percheron Stud Book of France. All draft horses imported as Percherons or Normans prior to that date are eligible, and all animals bred in this country showing five top crosses to recorded stock may also be recorded. Foals from recorded dams, got by recorded sires, are also eligible.

The organization of the Percheron Society of France and the publication of a stud book for the breed in that country will doubtless do much toward preserving its purity; and if this book shall be honestly and carefully managed, as I have every reason to think it will be, it will afford a guarantee as to purity of lineage which has hitherto been sadly lacking. Most of the horses bought by American importers from dealers in the large cities of France have doubtless possessed a good share of Percheron blood, but there has hitherto been no means of ascertaining the facts. Our importers have had to rely solely upon their own eyes and the integrity of French horse-

dealers; and the dealers of Paris, Rouen, Dieppe, Havre and other French cities are no more reliable and scrupulous than the average horse-dealer in other parts of the world. Those who have gone direct to the district which was once known as Le Perche, now comprised in the Departments of Eure et Loir, Loir et Cher, and Sarthe, where Percheron horses have for generations been bred in their purity, and where the fame of the Percheron race is still guarded as a priceless treasure, have always been reasonably sure of obtaining Percheron horses. But the Société Hippique Percheronne, which is managed by able men of high reputation, and under very strict rules, will hereafter furnish a directory of blood which few honest importers will care to ignore, and the result cannot fail to add to the popularity of the breed in both France and America. Three volumes of the Percheron Stud Book of France have been issued, the last volume containing about 5,000 pedigrees. The fourth volume of the American Percheron Stud Book is now being compiled by the Secretary of the Association, S. D. Thompson, of Wayne, Ill.

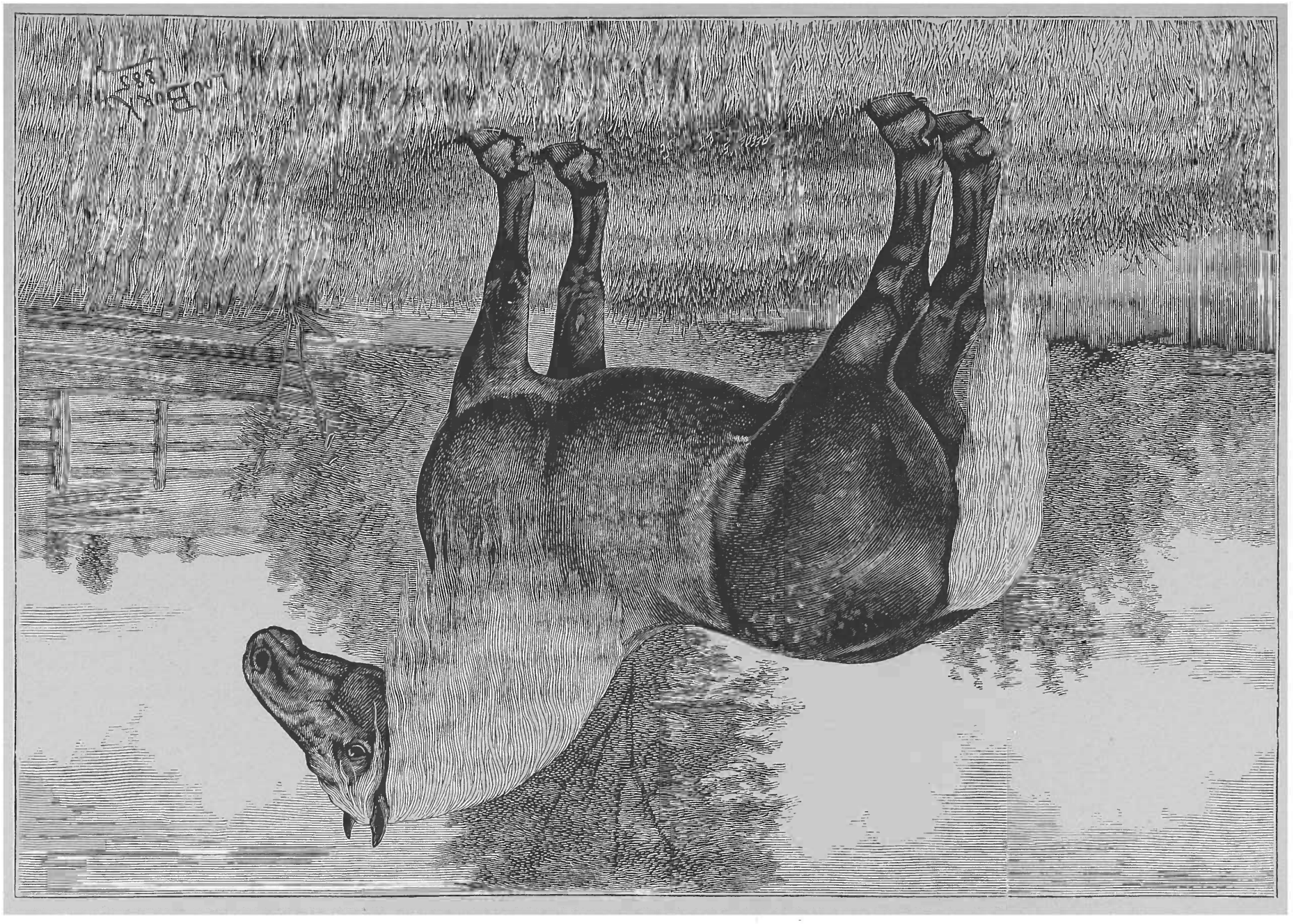
PERCHERON HORSE BRILLIANT (755).

Color, black; foaled 1876; got by Brilliant (756), son of Coco 2d (714); dam Ragout by Favori 1st (711), son of Vieux-Chaslin (713); 2d dam Aline by Coco (712), son of Mignonne (715). Bred by Ernest Pierriot, of Nogent-le-Rotrou, France. Imported and owned by M. W. Dunham, Wayne, Ill. Engraved after a sketch from life by Rosa Bonheur; redrawn on wood by Burk. This horse has gained a high reputation as a sire on both sides of the Atlantic, and is the chief breeding stallion in use (1886) in Mr. Dunham's well-known Oaklawn stables. He has been in constant use in the stud from the time he was three years old, and consequently has seldom been in the show ring; but at the great Percheron Horse Show held in Chicago September, 1886, he was awarded the highest honors for stallion with his get, and at the American Horse Show at Chicago, November of the same year, was awarded the *Breeder's Gazette* champion medal for best Percheron stallion of any age.


R. Bonheur
ENGRAVING COPYRIGHTED.

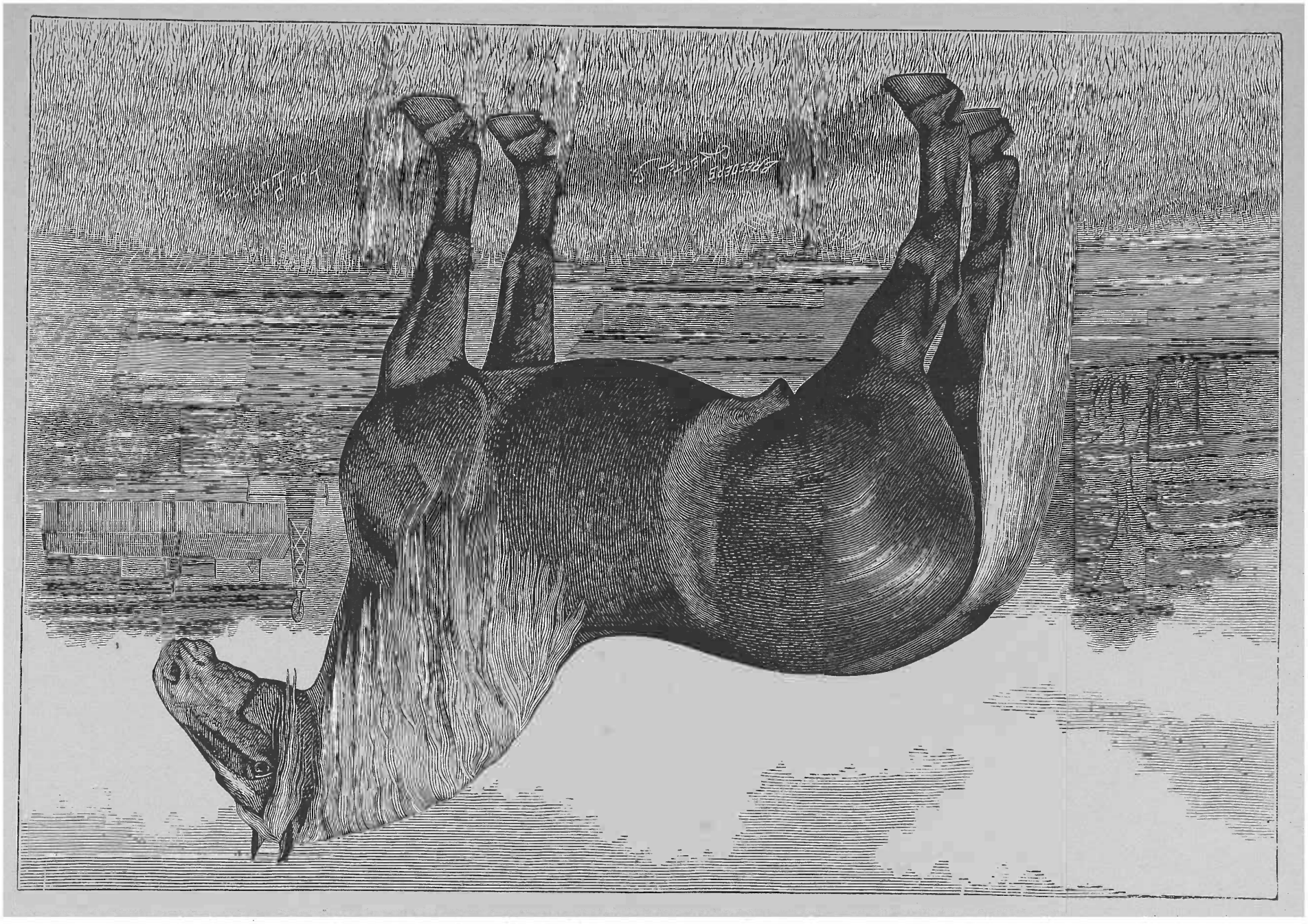
PERCHERON HORSE CHERI (2423).

Color, gray; foaled 1881; got by Bayard, son of Duke de Chartres (721); dam Mignonne by Coco 2d (714), son of Vieux-Chaslin (713). Bred by M. Caget, Department of Orne, France. Imported and owned by W. L. Ellwood, De Kalb, Ill. Cheri traces to Coco 2d, through both sire and dam, as Duke de Chartres was also by that celebrated sire. He has been greatly distinguished as a prize-winner, having been awarded among other honors the highest prize at the Government Show at Chartres, France, in 1885, and three first prizes at the Illinois State Fair of 1886. He is at this date (1886) the premier sire in use at the extensive breeding establishment of Mr. Ellwood. Engraved after a sketch from life by Burk, showing the horse at four years old.



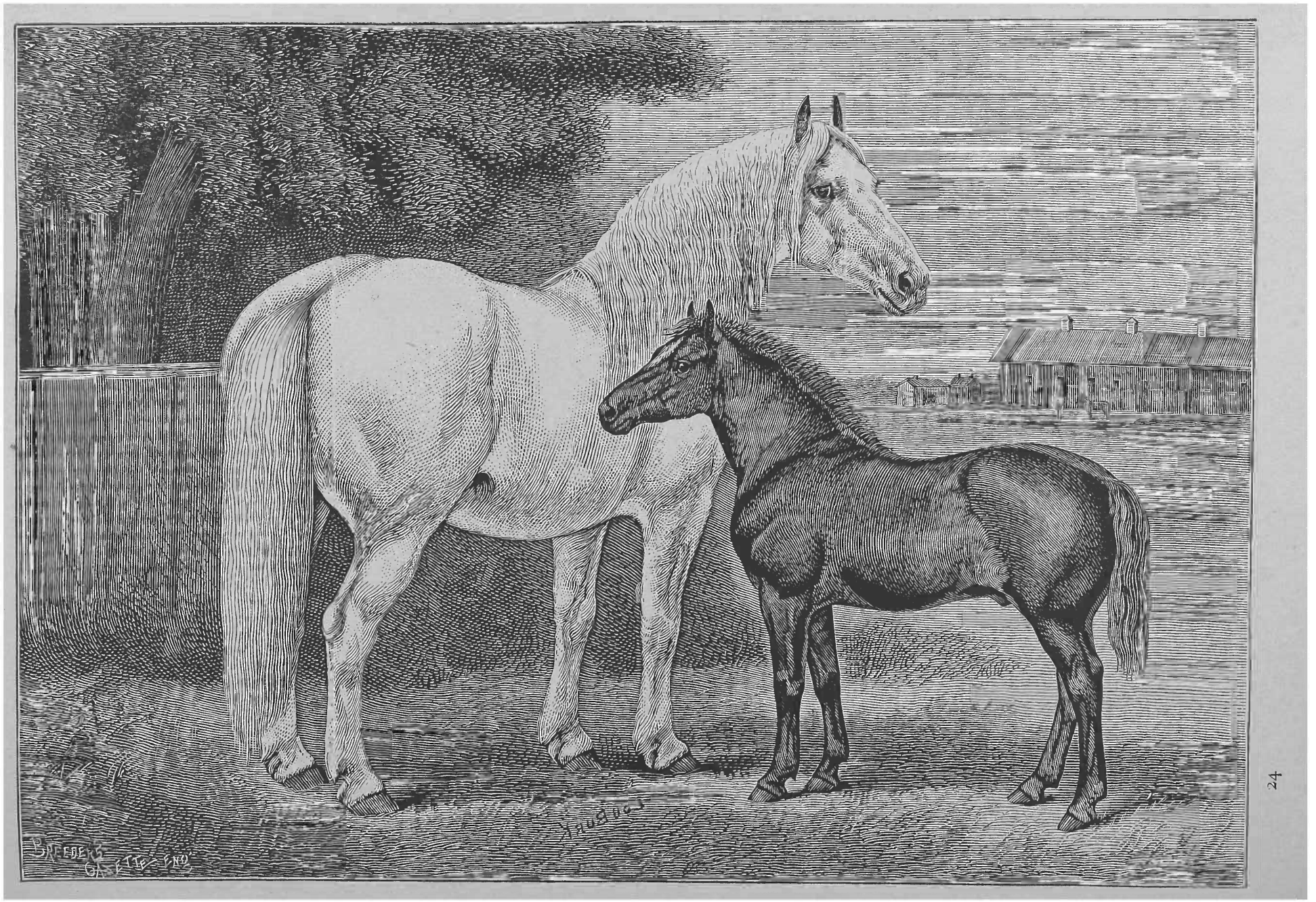
PERCHERON HORSE GLADIATEUR (2158).

Color, gray; foaled 1882; got by Cheri, son of Cheri, and he by Count (736); dam Carabie by Selim (749). Bred by M. Fromentin in the Department of Eure et Loir, France. Imported and owned by Leonard Johnson, East Castle Rock, Minn. Engraved after a sketch from life by Burk, taken February, 1886.



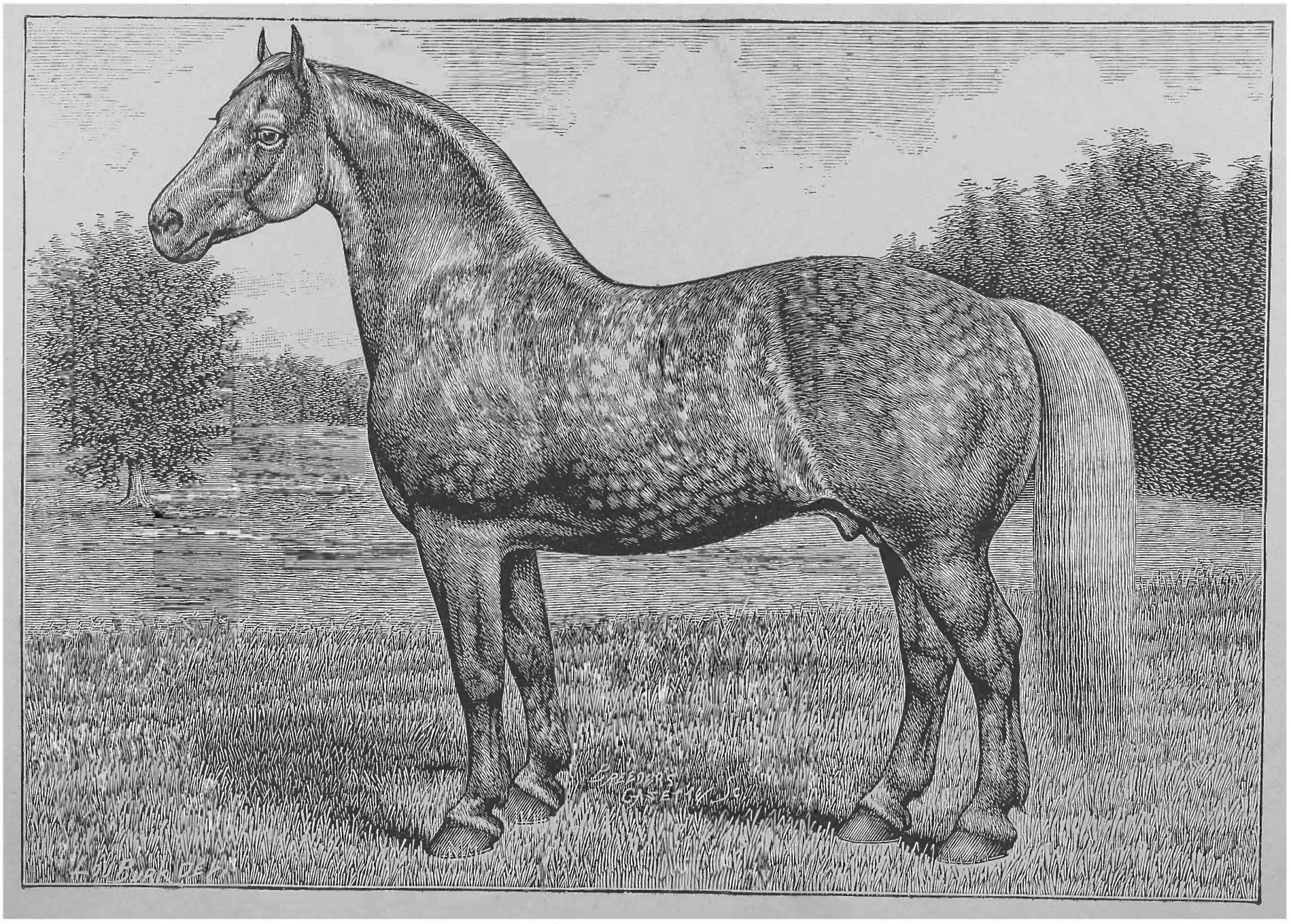
PERCHERON MARE DOLPHIN 1072 AND HER FOAL.

Color, gray; foaled 1878; got by Favori (725), son of Favori 1st (711); dam Pauline by Superior 454, son of Favori 1st (711); 2d dam Robine by Vieux-Chaslin (713). Bred in Department of Orne, France; imported 1880, and owned by Daniel Dunham, Wayne, Ill. This mare is registered in the Percheron Stud Book of France as Favorite (1356). The foal by her side in the engraving is Star 4026, and was got by Marquis (774). Engraved after a sketch from life by Burk taken when the mare was eight years and the foal six months old.



PERCHERON HORSE CONDE 3574.

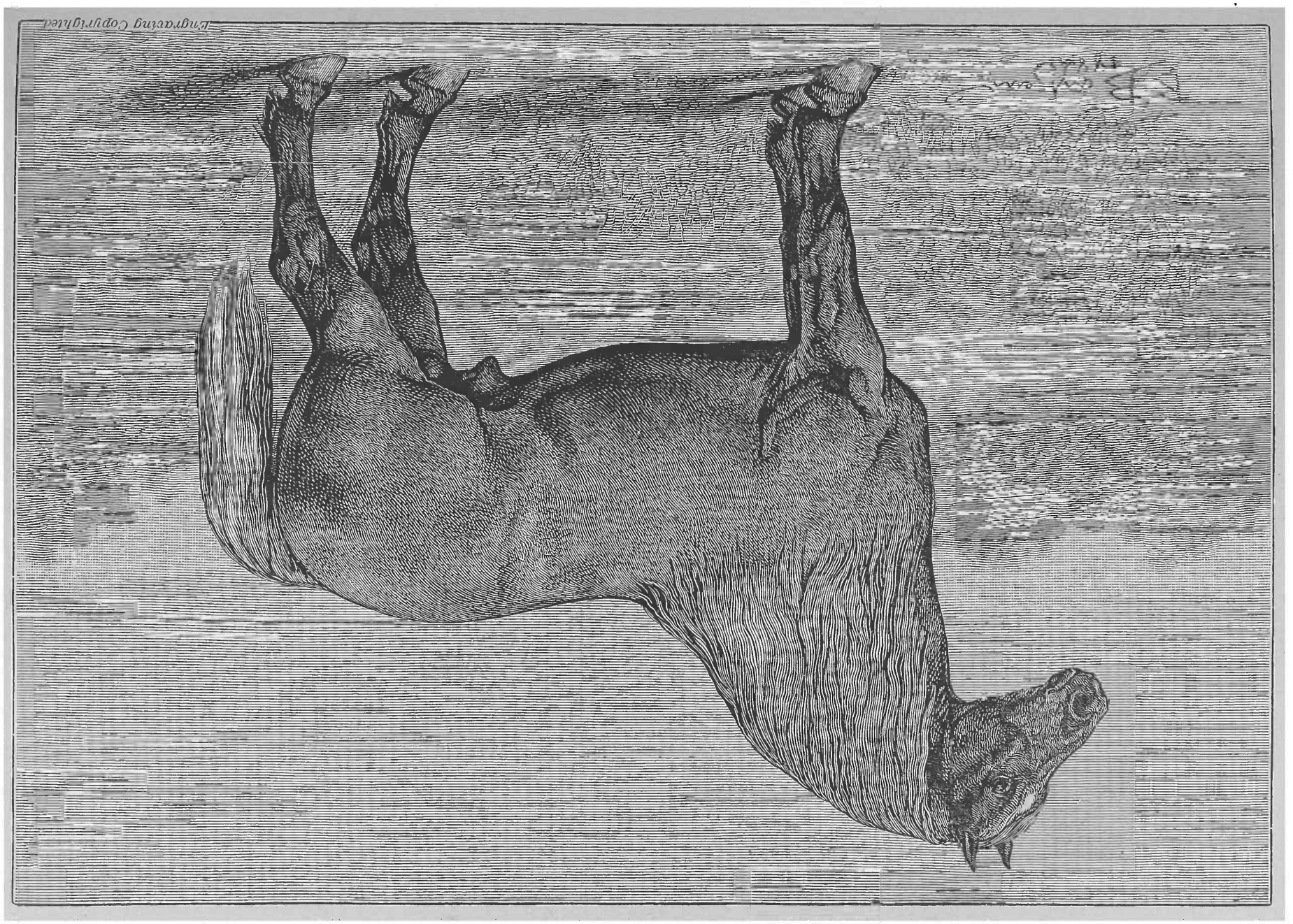
Color, gray; foaled 1879; imported from France 1882 by Capt. T. Slattery, of Onarga, Ill., and for several years kept at the head of his breeding stud; owned (1886) by Stevens & Smith, Rossville, Ill.



PERCHERON HORSE CESAR (601).

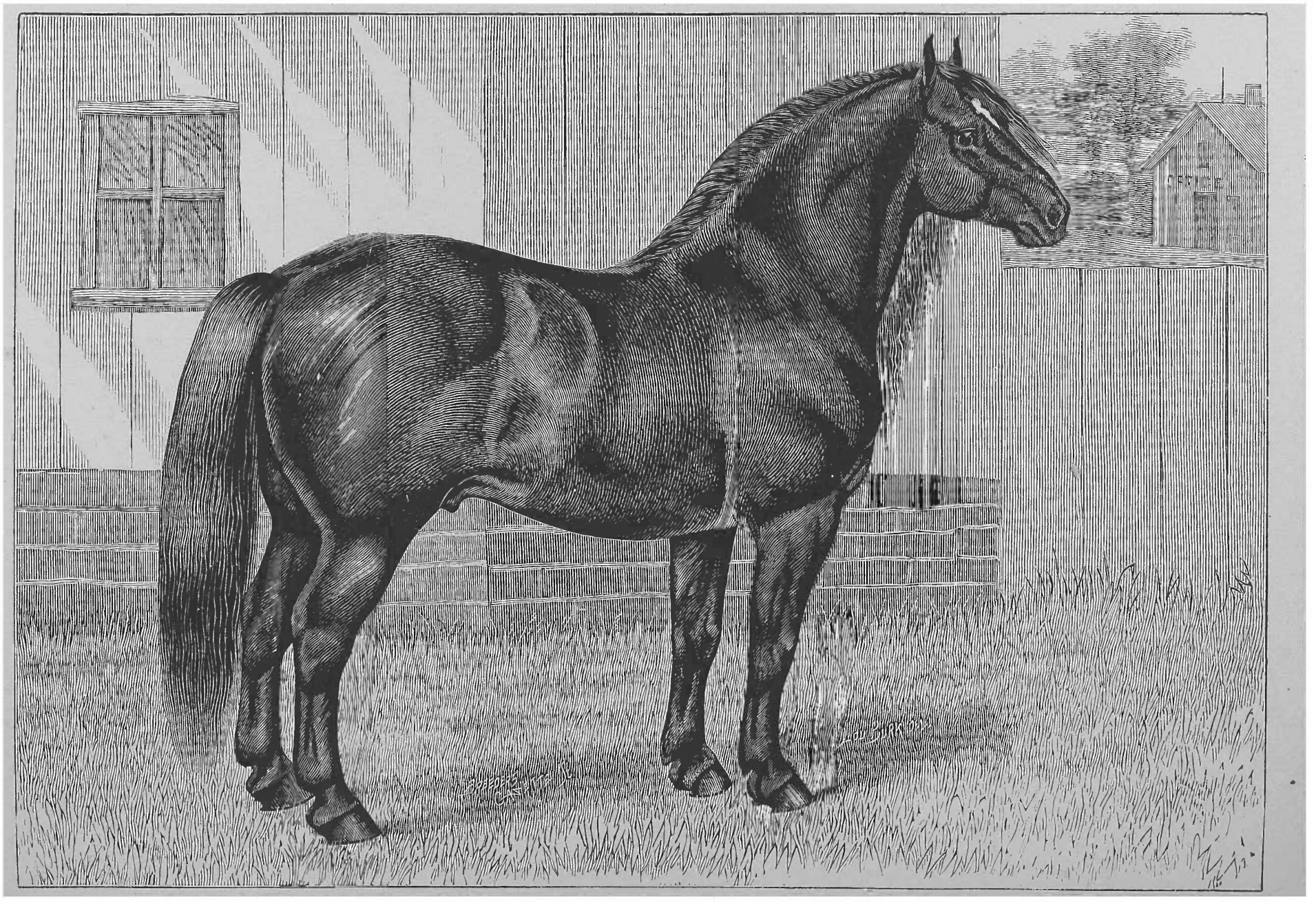
Color, gray; foaled 1882; got by Vaillant (404), he by Prosper, son of Decidi; dam the Percheron mare Julie (4887). Bred by M. Durand, Department of Orne, France. Imported 1884 by M. W. Dunhan, Wayne, Ill., and sold by him to Hitchcock & Collier, St. Louis, Mo. This horse was a remarkably successful prize-winner both in France and America, and was regarded by Mr. Dunham as one of the very best Percheron horses ever imported by him. Engraved after a sketch from life by Rosa Bonheur, made August, 1884.

Engraving Copyrighted



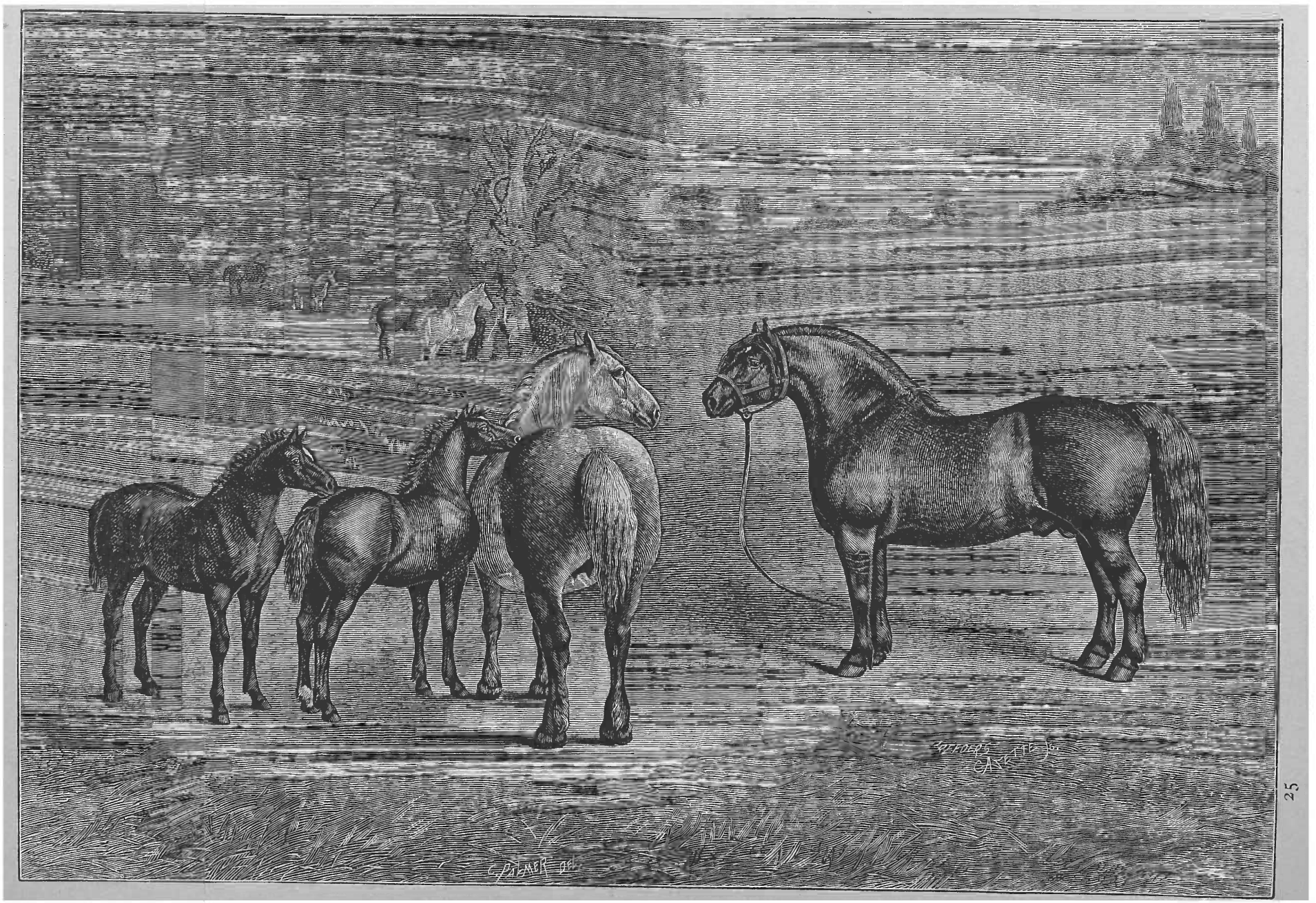
PERCHERON HORSE CHEER (1404).

Color, black; foaled 1878; got by Brilliant (756) [see page 179], dam Robine by Coco 2 (714), son of Vieux-Chaslin (713). Bred in Eure et Loir, France. Imported 1881 by L. Johnson, East Castle Rock, Minn.; owned by W. N. Johnson, Aberdeen, Dak.



GROUP OF PERCHERONS.

The engraving on the opposite page represents a side view of the Percheron horse Brilliant (see page 179), with the Percheron mare Francina (1577) and two young foals. Francina (1577) is a gray, foaled 1878; got by Philibert (760), son of Superior (730); dam Margot (795) by Favori 1st (711). The two foals are Black Bart and Fortuna, both by Brilliant. The mare Francina was bred near Nogent-le-Rotrou, France, and was imported by M. W. Dunham, Wayne, Ill., who owns the entire group. For pedigree of Brilliant see page 176. Engraved after a sketch from life by Palmer taken August, 1885.



CHAPTER VIII.

OTHER BREEDS OF HORSES.

There are several other breeds in addition to those especially mentioned in the preceding chapters that should be noticed in detail, if it had been my purpose to include in this work a complete description of all the known breeds of the world, but I have chosen rather to confine it to such as are recognized and known in our own country. Among these I may mention briefly:

The *Suffolk Punch*, of England, especially distinguished as an agricultural horse in that country, uniformly of a chestnut or sorrel color, not so large as the Shire horses or Clydesdales, but compactly built, round-bodied, short-legged horses, rather light-boned for their weight, and with the general reputation of being rather defective in the feet, especially when used upon hard roads or stony streets, but in this respect greatly improved of late years. This is perhaps the best established of all the so-called agricultural breeds of Great Britain, but they are not so universally popular even there as the Clydesdale and Shire horses. It is possible that the fact that other countries (especially our own) have not appeared to demand horses of the Suffolk type has had something to do with their popularity in their own country. Very few of them have been brought to the United States, and such as have been imported appear to have attracted but little attention. A stud book has been instituted for

this breed in England, and several volumes have been published within the past six years.

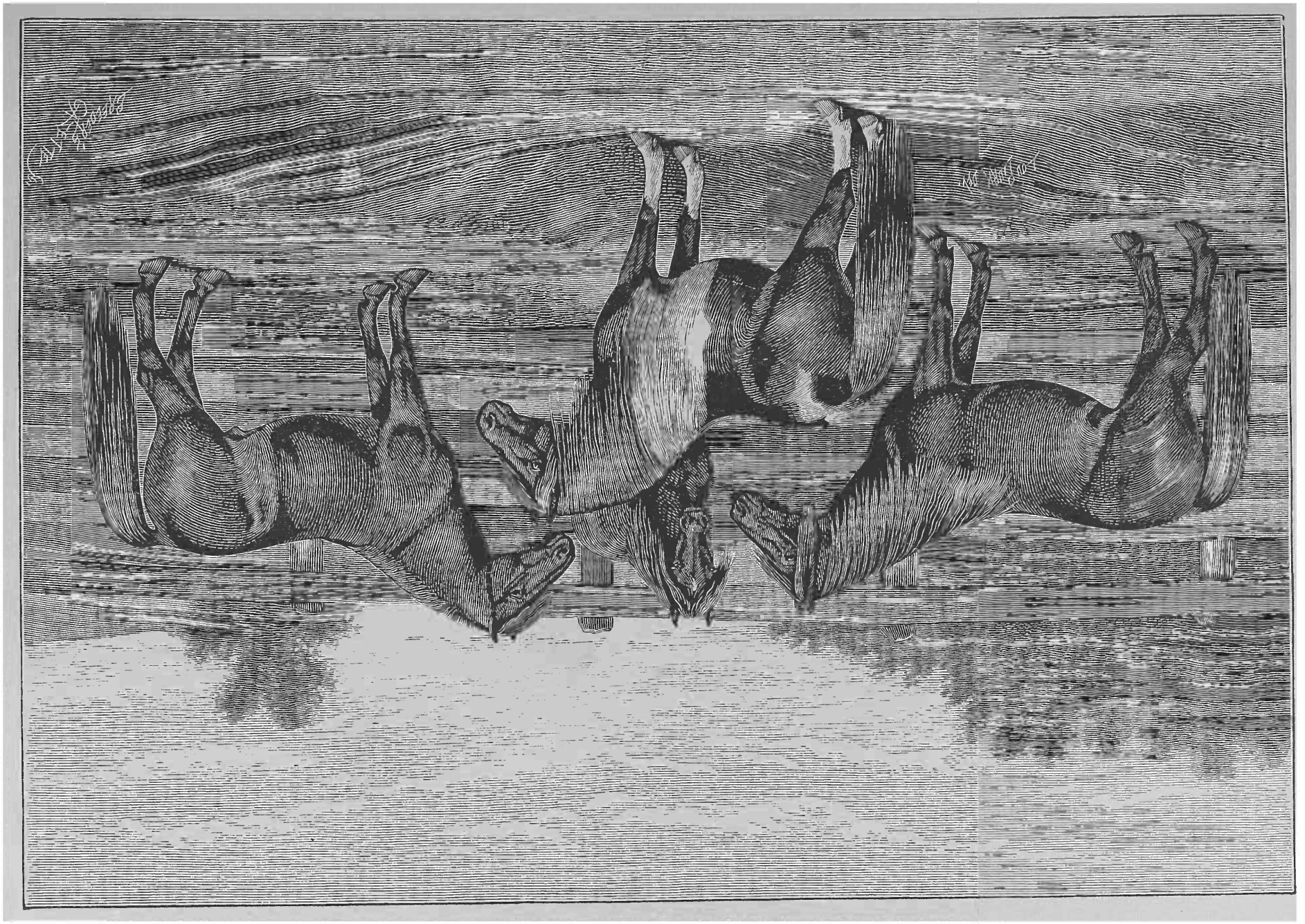
The *Boulonnais* is a heavy draft breed, found principally north of the river Seine, and near the sea coast in Northwestern France, once the home of the old Flemish breed, and evidently possessing much of the old Flemish character. They are of all colors, but frequently gray, like the Percherons, and are usually larger, coarser and less active than their relatives of Le Perche; but there is no doubt of the fact that when the demands of commerce began to call for greater size and heavier bone than was characteristic of the ancient Percheron race, the Boulonnais blood was largely called upon to furnish it. It is quite probable that many of the French horses brought to this country and sold as Normans or Percheron-Normans more properly belong to this Boulonnais breed.

The *Shetland Ponies*, too well known to need any description in a work of this nature, take their name from the Shetland Islands, where they originated, doubtless through the effect of the bleak climate and scanty subsistence to which the original specimens of the race have been for ages subjected upon these islands. They are also bred in considerable numbers in the north of Scotland. The spotted or parti-colored characteristic so common among these ponies would seem to indicate an origin common with the ponies which inhabit the Himalaya Range, to which allusion is made on page 18 of this work. There are other comparatively diminutive races, as the Welsh or Exmoor ponies, the Norwegian ponies, and others of Europe and Asia, but a description of each and all of them would be more interesting to the student of natural history than to the practical American breeder.

The *Mustangs*, or wild horses, that were found upon the plains of Texas and New Mexico, and elsewhere on our own continent, are a tough, hardy and usually ill-tempered race of small horses, remarkably agile and sure-footed, and have descended from the original Spanish stock brought to Mexico by the Spaniards in their early efforts at the conquest of that country. The spotted or pie-bald color, so often found among these horses, probably comes from a cross with the horses of the mountain region north and east of Persia, through the original Spanish stock. The Indian ponies, so common in our western Territories, have undoubtedly the same origin, and many of them, especially those that have been bred in the higher latitudes, approximate very closely the form and size of the Shetland pony. The hardiness aud powers of endurance of many of these horses are simply marvelous; but these valuable qualities are largely neutralized by ill-temper and lack of size. When tamed and broken they are especially adapted for use in herding cattle upon the great ranches of our western plains, and for this purpose the genuine Mustang is the chief reliance of the herdsman. They are bred, herded and branded in about the same manner as that practiced by our western ranchmen with their immense herds of cattle. Thoroughbred sires, as well as stallions of the various draft breeds, have been used upon Mustang mares with excellent results in most cases.

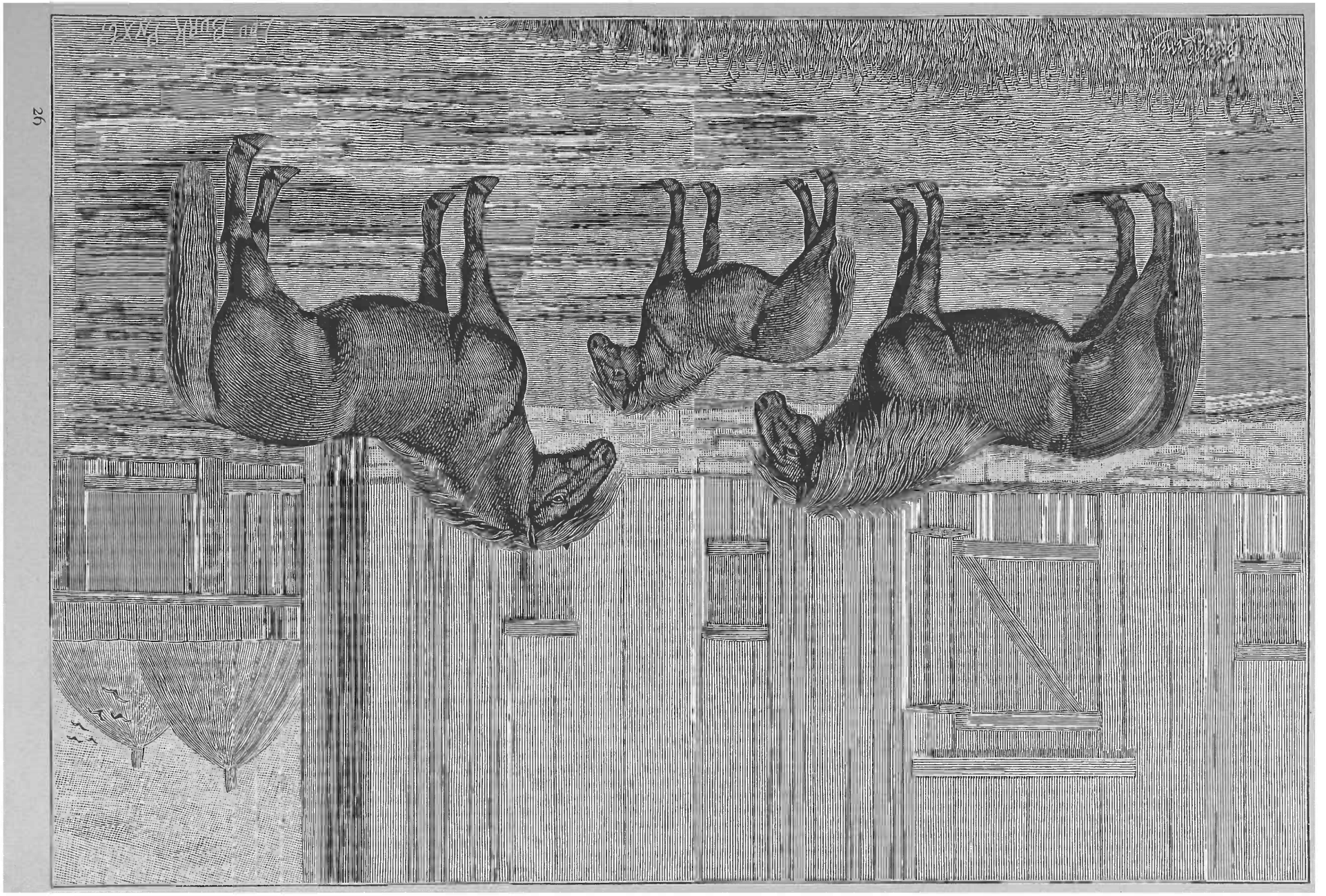
GROUP OF SHETLAND PONIES.

Imported and owned by Eli Elliott & Co., West Liberty, Ia.



GROUP OF SHETLAND PONIES.

Imported and owned by Wilcox & Liggett, Benson, Minn.



CHAPTER IX.

SHORT-HORN (OR DURHAM) CATTLE.

The Short-horn (or Durham, as formerly called) is certainly the most generally disseminated, and is probably the oldest of our improved breeds of cattle. Its original home was in the valley of the river Tees, in the County of Durham, in the north of England; hence the name Durham has been frequently, and is still in many places, used as the name of the breed. In the early history of the breed they were also often called Teeswater cattle. While the existence of this breed is clearly traced back to the early part of the eighteenth century, its written history may be fairly said to begin with the breeding operations of Charles and Robert Colling, about 1780; and from that time on it has had a recognized place in the agricultural literature of Great Britain.

Mr. L. F. Allen, the American historian of the Short-horn breed, after establishing the fact of its existence in the regions above mentioned as far back as 1720, and tracing it down to about the middle of the eighteenth century, says: "This brings us forward to a period at which some intelligent inkling is had of the existence of Short-horn cattle in the hands of known breeders, and of an excellence in style, weight and quality commanding the attention of agricultural historians, and at about which date the lineage of the known

ancestors of our later Short-horn tribes or families can, with a considerable degree of certainty, be traced. It is possible that some errors, both of fact and inference, may have crept into the various accounts in those early days of Short-horn breeding; but we have sufficient evidence of the antiquity of the race and the lines in which they had descended down to the year 1750.

"The colors of the cattle in those days were red, of different shades, red-and-white, pure white, frequently white on the body with roan necks and heads, and roan of red-and-white intermixed over the body, or in patches, with either more of the white or of the red prevailing as now. What was their exact quality, style or symmetry, as compared with the choice Short-horns of the present time, it is difficult to say, as we have no accurate portraits of them; but that they combined the main points of excellence belonging to the race as now recognized, and in which still higher improvements over them have been made in the cattle of late years, we can have little doubt."—(Allen's "History of Short-horns," page 27.)

It appears that about the middle of the eighteenth century some attention began to be paid to pedigree, and from that time on many of the breeders kept some sort of a record of their breeding operations. Indeed the Studley bull (626), bred by Mr. Sharter, of Chilton, to which many of the old Short-horn pedigrees trace, was calved in the year 1737, and Mr. Allen in his history gives the names of some thirty bulls that are recorded in the Short-horn Herd Book as having lived prior to 1780, the period when the written history and record of the breed may be said to have begun. As in almost if not quite all foundation records for the various breeds of live stock, the information is meager as to the maternal ancestry

of these early sires, but the inference is clear that they were mainly cows belonging to the best established herds of the region in which the bulls were bred.

It is not known from whence the original stock of cattle in the valley of the Tees, which afterward developed into the Short-horn breed, derived their superiority over other strains. It has been very positively asserted that in the formative steps of the breed several importations of Dutch cattle were made. Culley, writing in 1785, says: "I remember Mr. Michael Dobison, of the Isle, Sedgefield, who went in the early part of his life into Holland in order to buy bulls. Those he brought over, I have been told, did much service in improving the breed; and this Mr. Dobison and his neighbors, even in my day, were noted for having the best breeds of Short-horned cattle, and sold their bulls and heifers for great prices." And Mr. Thornton, in his "Short-horn Circular" (Vol. I, page 163), supplements the foregoing from Culley by stating that "Sir William St. Quintin and Sir James Pennyman had stock of this Dutch blood. Coates, in the fifth volume of the Herd Book, gives the final cross of Bates' Wild Eyes tribe thus: 'Descended from Mr. Michael Dobison's stock, which he purchased in Holland above a century ago.'"

The Collings, Robert and Charles, began breeding Short-horns with a definite purpose of improvement, and clear ideas of what constituted bovine excellence, about 1780, and soon acquired such wide reputation for the superiority of their stock that bulls of their breeding were eagerly sought after by the farmers of the adjacent country, and for these bulls they were able to command what was then considered enormous prices. Their breeding operations were carried on with rare good judgment, and in their hands the im-

provement of the breed and its growth in popular favor was rapid. One of the earliest and most famous of the sires used by them was a short-legged, yellowish red-and-white bull called Hubback (319), calved 1777, bred by John Hunter, and descended from one of the herds into which, it is alleged, the Dutch blood had been introduced. So popular did the descendants of this bull become in later years, and so great was supposed to have been his influence in creating what was thought to be the highest type of the improved Short-horn in the early part of the nineteenth century, that the eminent Short-horn breeder Thomas Bates, who became prominent as a breeder about the time the Collings were leaving the field, expressed the opinion that no animal ought to be admitted to the Herd Book as a Short-horn that did not trace to Hubback. Charles Colling, however, bred a bull calved 1794, called Favorite (252), that was a greater favorite than ever Hubback had been. He was used indiscriminately upon his own offspring down to the third generation, and probably had a more potent influence in fixing the type of the breed than any other single bull that has been produced. He was larger than the average Short-horn of his day, was a light roan color, possessed wonderful vigor and a strong constitution, and was used as a breeding bull for some thirteen years. The fact that Mr. Chas. Colling at one time introduced the blood of the Scotch Galloway into a portion of his herd has been the theme of considerable discussion in Short-horn breeding circles. This Galloway cross was introduced through a bull known as Grandson of Bolingbroke (280), who possessed one-fourth of the blood of the Scotch Galloway; and this Galloway cross is commonly alluded to as the "alloy" introduced by Mr. Colling. But the fraction of this "alloy" blood which

entered into the composition of this Grandson of Bolingbroke was so small that it long ago ceased to be of any material importance in estimating the value of Short-horn pedigrees, and is scarcely worth alluding to now except as a matter of history.

Since the days of the Collings there have been many eminent breeders who have devoted their energies to the work of effecting improvement in the breed and who have left the impress of their judgment upon the forms of the Short-horns as bred by them. Among these may be mentioned the names of Thomas Bates and Thomas Booth, Sr., both of whom came upon the stage of active life as stock-breeders about the time the Collings left it, and who each founded families or strains of Short-horns which to this day bear their respective names.

But while the Kirklevington (Bates) Herd is known throughout the Short-horn world by its Duchess, Oxford, Wild Eyes, Barrington and other tribes, and while the Killerby, Studley, and Warlaby (Booth) collections will ever be memorable as the nurseries of such show-yard celebrities as Isabella, Bride Elect, Bracelet, Necklace, Queen of the May, or Lady Fragrant, there are many other of the older herds to which the breed as it exists today is very largely indebted. But Thomas Bates and the Booths had the skill to so manipulate the material afforded by contemporary herds as to produce a class of cattle possessing in each case a uniformity of type that caused them to be much sought for as breeding stock; more modern instances of success under similar methods being afforded by the Sittyton Herd of Mr. Amos Cruickshank, of Aberdeenshire, Scotland, and by the Rose of Sharons as bred by the late Abram Renick, of Clark Co., Ky.

The breed was probably introduced into America almost immediately after it came into prominence in Great Britain, but in the absence of public record it is impossible to fix exact dates. It was not until after the war of 1812 that they were brought over in sufficient numbers to make much impression. The Sanders importation of 1817 (popularly known as "the Seventeens"), the Powel and Whitaker importations from 1820 to 1837, the Ohio importations of 1834–36, and Dun & Smith of 1833 to 1836—the most considerable within these dates—may be considered as having formed the foundation of the breed in this country.

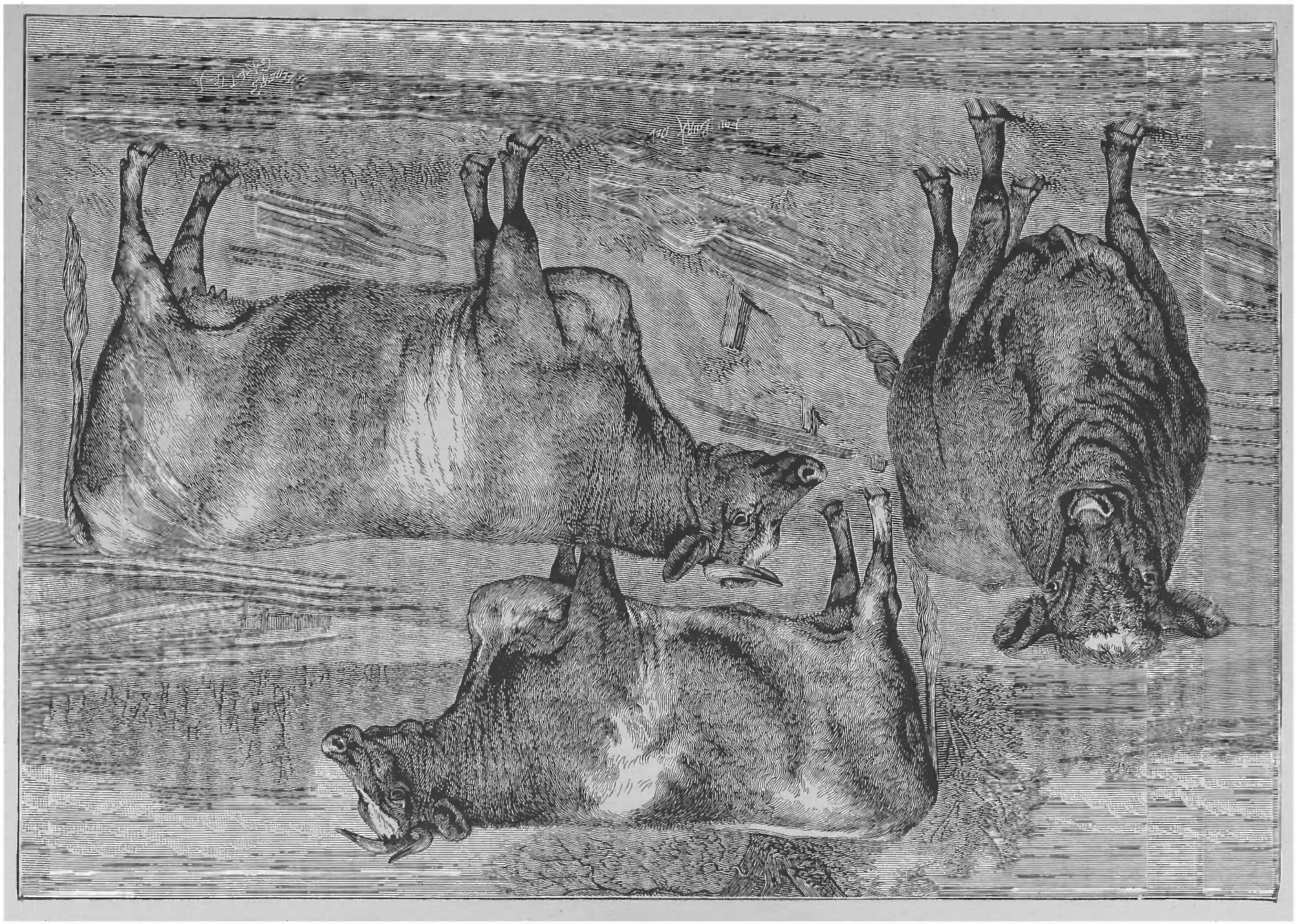
The literature of the Short-horn breed is voluminous, and to works especially devoted to this subject the reader is referred for further particulars. Among these we may mention Bell's "History of Bates Cattle," Carr's "History of Booth Cattle," Rev. W. Holt Beever's "Short-horn Tribes," Allen's "History of Short-horns," William Warfield's "History of Imported Short-horns," George W. Rust's "History of Imported Short-horn Cows" (contributed to the *Breeder's Gazette*), and the Short-horn Herd Books of Great Britain and America. The former was founded in 1822, and since that time thirty-one volumes have been issued. The first volume of the American Short-horn Herd Book was published in 1843, and has since grown to thirty-one volumes.

The Short-horn breed was originally famed for a combination of beef-producing and dairy qualities, making it, as its advocates claimed, especially adapted to the wants of the general farmer; and the qualities that originally distinguished it are still retained to a large degree. In the hands of some breeders they have been made to assume the lower, blockier form that is supposed to indicate the

highest degree of excellence in a beef-producing animal, while with others the tendency has been to a higher degree of excellence in the dairy. But amid these slight modifications and variations the breed still retains its distinctive, characteristic type, and in point of size is probably the largest of our breeds of cattle. Its colors have always been red and white, with various blendings of these two colors. Many of the best among the early Short-horns were pure white, but that color has lost caste of late, and red is especially fancied in this country. In England, however, the roan color is much more common than any other, and this peculiar blending of the red and white, popularly called roan, is rarely if ever seen in any animal of the bovine race which does not possess some portion of the Short-horn blood.

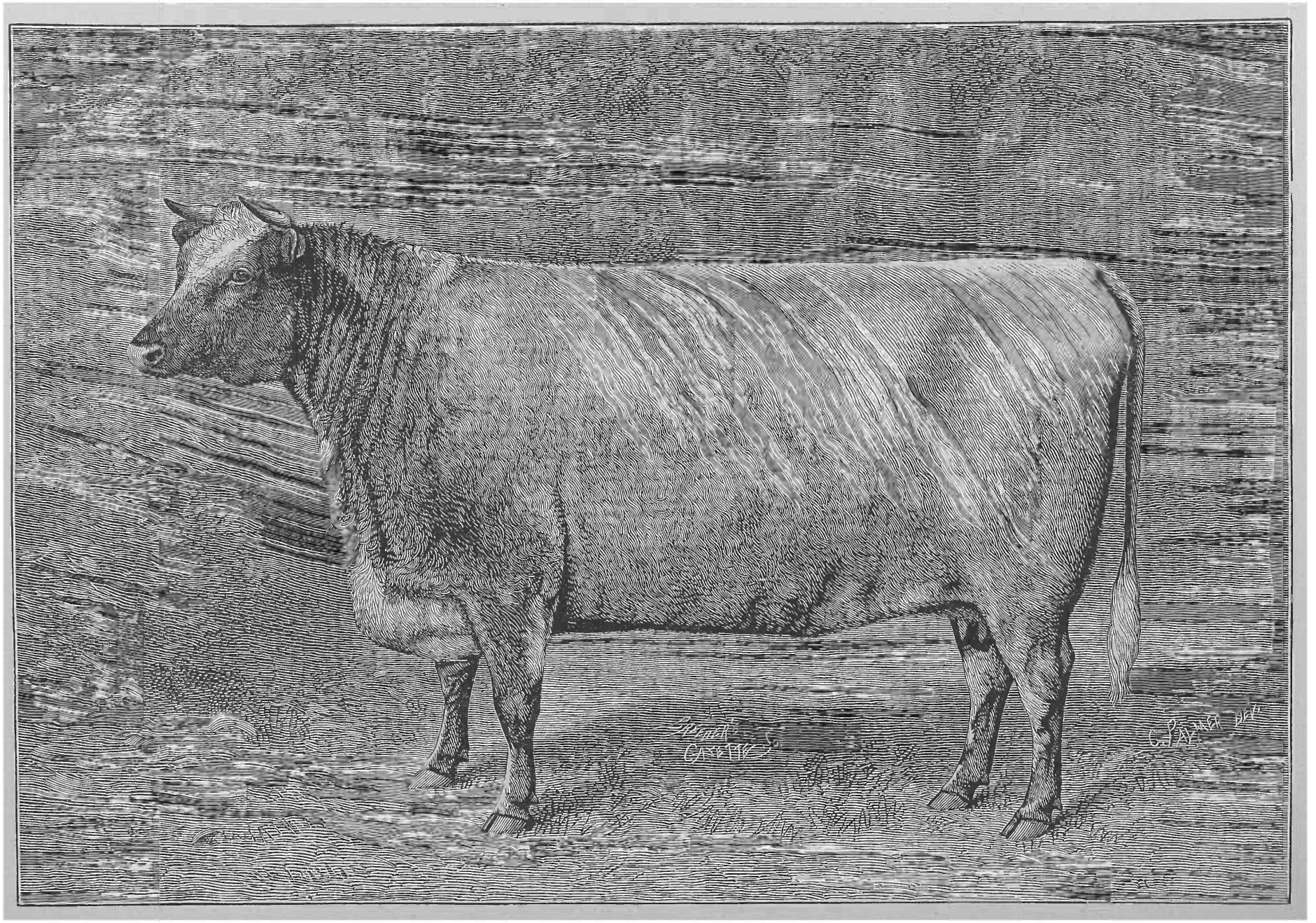
GROUP OF SHORT-HORNS.

The 10th Duchess of Geneva (a roan of May 15, 1867,) and her famous son Earl Bective's Duke of Underley (33745), shown on the opposite page, serve to recall the world-famous public sale of the Walcott-Campbell herd of Bates Duchesses at New York Mills, Sept. 10, 1873, at which the highest prices ever attained by animals of any breed of cattle were reached through extraordinary competition between English and American buyers. Six Duchesses fell to English bidders at a total of $147,100, *an average of $24,517 per head!* and eight to American breeders for $115,300, an average of $14,412.50; the total fetched by the fourteen lots (three of which were bulls) being $262,400! The 10th Duchess of Geneva (in calf to 2d Duke of Oneida) went to Lord Bective, Underley Hall, Westmoreland, at $35,000 (the produce being the Duke of Underley). Highland Flower (shown in the center background of our picture) was a roan of August, 1868, got by Mountain Chief (20303), out of Clarence Flower by Fitz-Clarence (14552). She was bred by Mr. Torr, of Aylesby, who built up a very celebrated herd of Booth extraction, and was sold at his sale of Sept. 2, 1875, to Rev. T. Staniforth, of Storrs, Windermere, England, for $7,500. The engraving is after reproductions by Burk from Williams' "Etchings of Celebrated Short-horns."



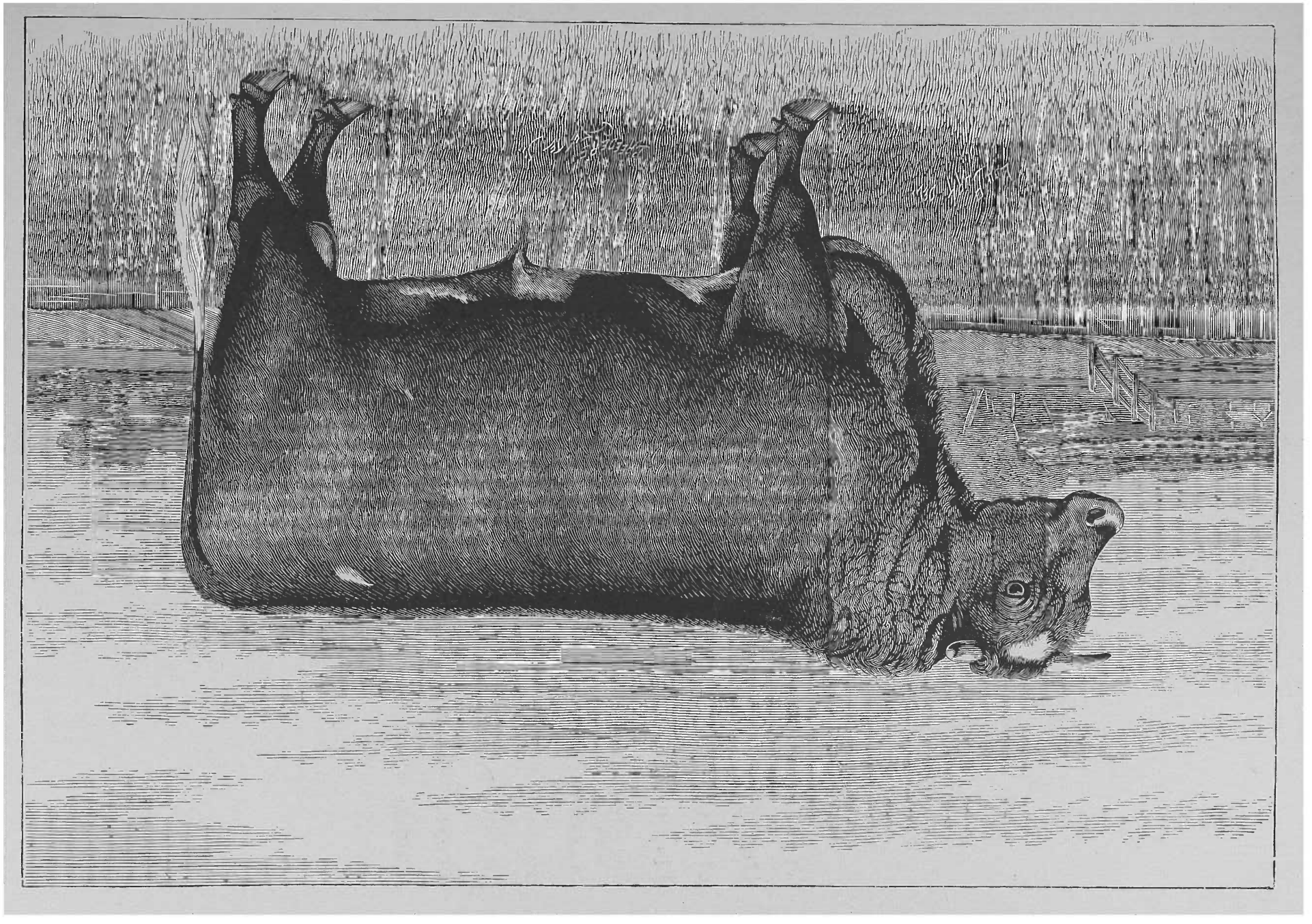
SHORT-HORN COW GOLDEN THISTLE.

Color, roan; calved Nov. 4, 1881; bred by Amos Cruickshank, Sittyton, Aberdeenshire, Scotland; imported by James I. Davidson, Balsam, Ont.; property of Col. W. A. Harris, Linwood, Leavenworth Co., Kan.; got by Roan Gauntlet (35284), dam Golden Lady (of Mr. Cruickshank's Brawith Bud tribe) by Champion of England (17526); 2d dam Golden Princess by Lord Raglan (13244). Recorded in American Short-horn Herd Book, Vol. XXVI. Engraved after a sketch from life by Palmer.



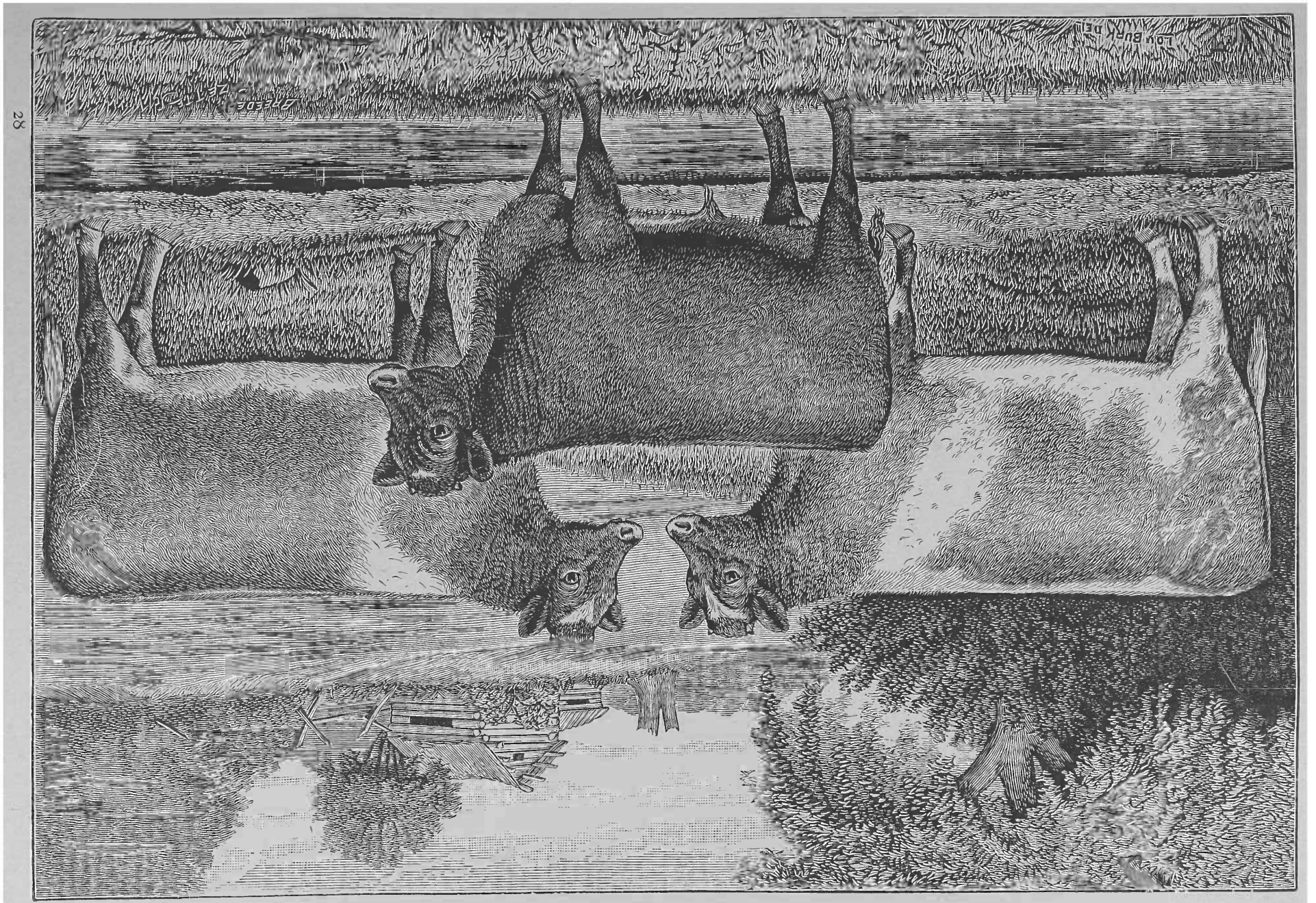
SHORT-HORN BULL BENVENUTO'S BOOTH 68378.

Color, red; calved April 16, 1883; bred by B. P. & S. D. Goff, Winchester, Ky.; got by Major Booth 30240, dam Benvenuto's Queen (A. H. B., Vol. XXIX) by Benvenuto 16275; 2d dam Queen of the Realm by Star of the Realm 11021; 3d dam imp. Forest Queen, a very noted Aylmer-Booth cow imported by the Hon. M. H. Cochrane, sold at Abram Vanmeter's sale of Aug. 2, 1873, for $2,000, and the dam of the late Gen. Meredith's famous show bull Forest Napier 11973. Benvenuto's Booth now stands at the head of the Riverdale Herd of Mr. S. E. Prather, Springfield, Ill., the engraving being from a painting from life by Burk, showing the animal after he had just turned three years of age.



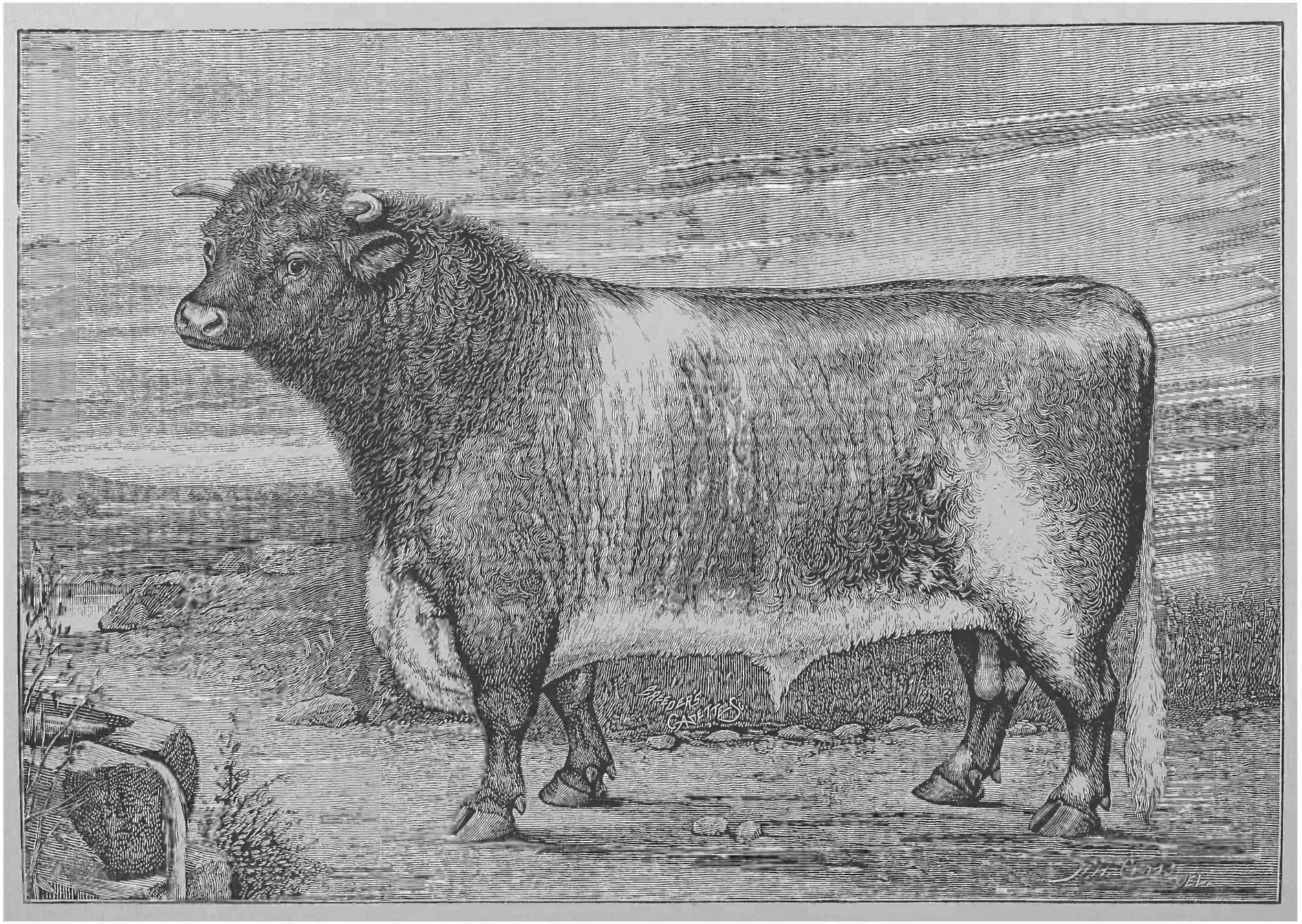
GROUP OF SHORT-HORN CALVES.

Duke of Flat Creek, Duchess of Flat Creek, and Duchess of Flat Creek 2d; bred by the Messrs. Hamilton, of Flat Creek, near Mount Sterling, Ky. All three descend in the Bates Duchess line; the bull calf being a son of the well-known Barrington Duke 37624, having for dam the $7,525 heifer Airdrie Duchess 10th. The heifers are from Airdrie Duchess 2d and Airdrie Duchess 5th (of the 10th Duchess of Airdrie's family), and were sired by 23d Duke of Airdrie (41350) [late the property of C. Hills & Son, Delaware, O.] and imp. Grand Duke of Geneva (28756), so long in service at Flat Creek. Group sketched from life by Burk in 1882.



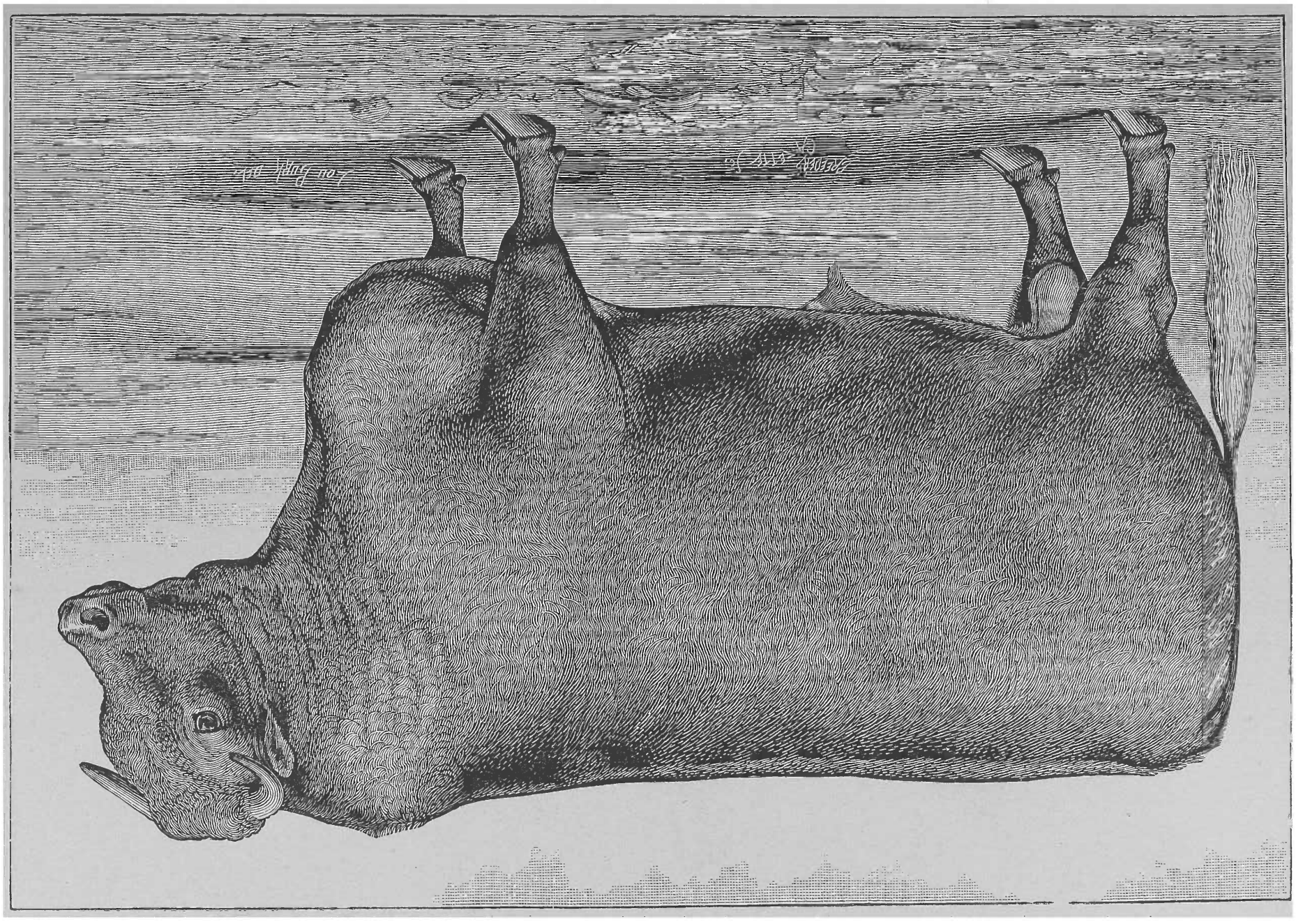
SHORT-HORN BULL 4TH DUKE OF CLARENCE (33597).

Color, roan; calved Oct. 28, 1874; bred by Col. Gunter, Wetherby Grange, England; imported and used in the Bow Park Herd, Brantford, Ont., Can., Thomas Nelson & Sons, proprietors; got by 18th Duke of Oxford (25995), dam the Bates Duchess cow Duchess 109th by 2d Duke of Claro (21576); 2d dam Duchess 100th by 3d Duke of Wharfdale (21619), etc. Engraved from a painting by Cross.



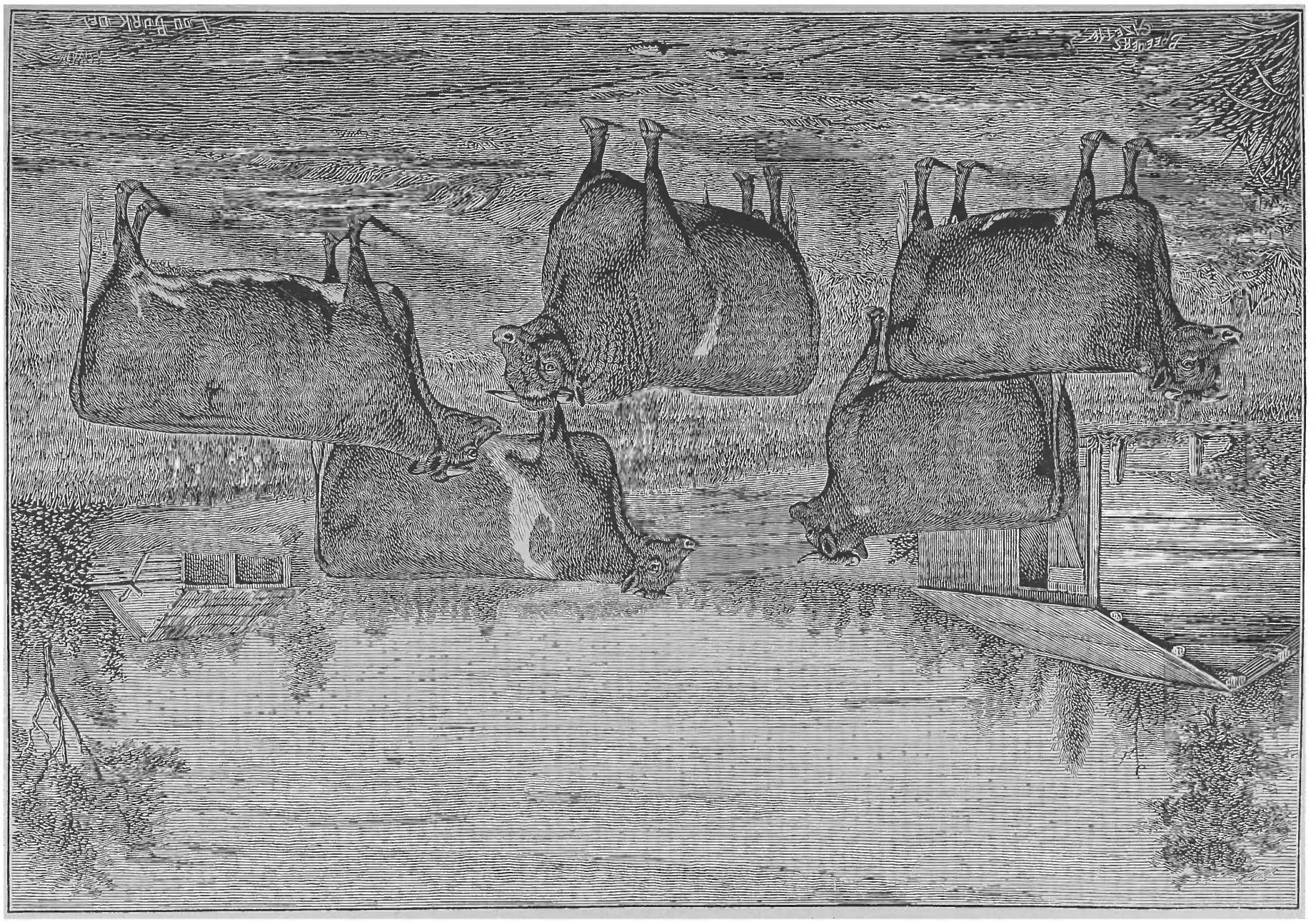
SHORT-HORN BULL IMP. VON TROMP 54160.

Color, red; calved Dec. 11, 1881; bred by Amos Cruickshank, Sittyton, Aberdeenshire, Scotland; imported by James I. Davidson, Balsam, Ont.; sold by him to J. H. Potts & Son, Jacksonville, Ill.; by them to Shephard, Hill & Mathers, of same place, and at their dispersion sale in June, 1886, purchased by Messrs. Wilcox & Liggett, Benson, Minn.; got by Barmpton (37763), dam Victoria 45th by Cæsar Augustus (25704); 2d dam Victoria 42d by Forth (17866), etc. Von Tromp was the sweepstakes Short-horn show bull of 1885. Sketched by Burk from life.



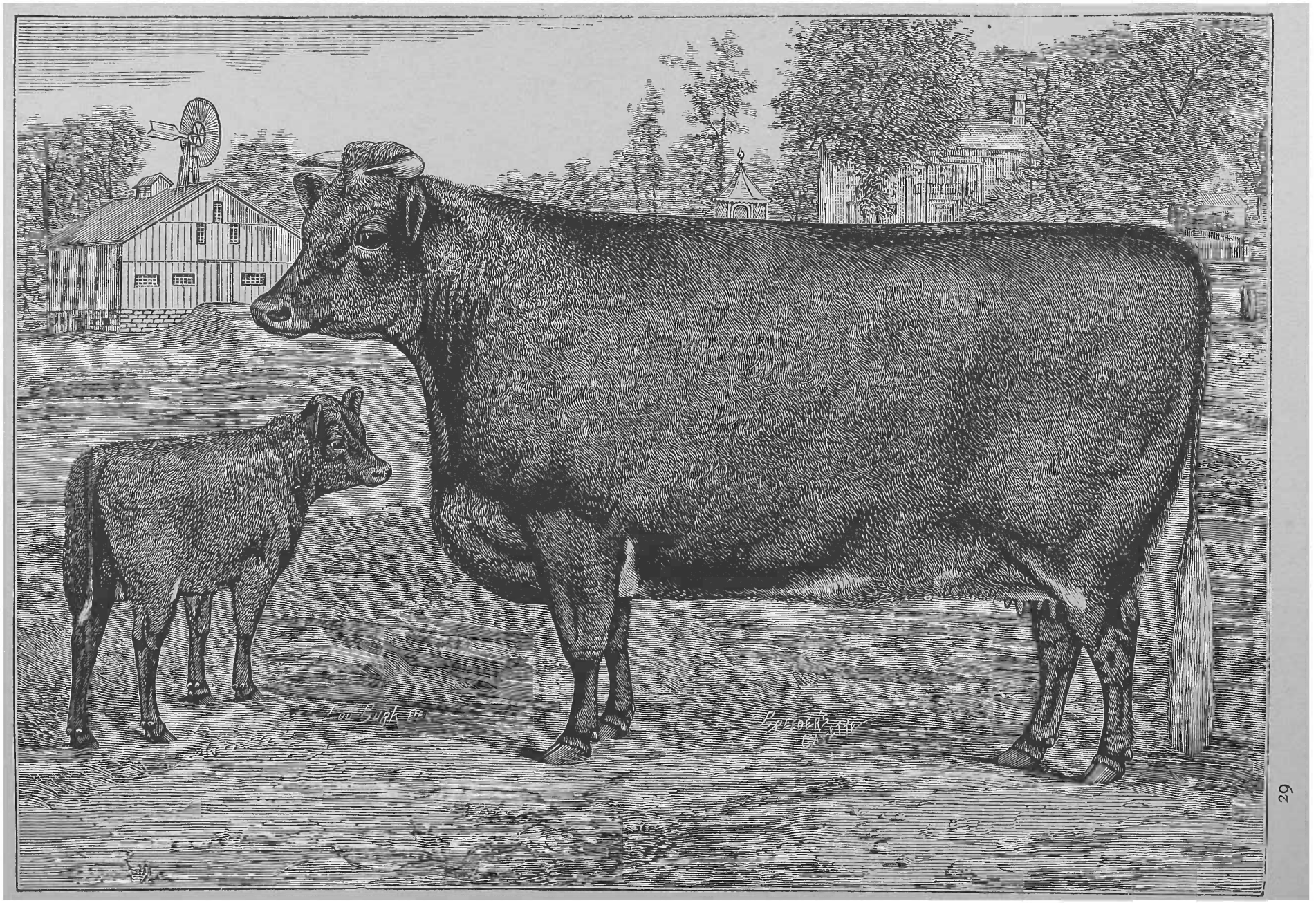
A SHORT-HORN SHOW HERD.

Exhibited with considerable success in the West during the fair seasons of 1882 and 1883 by Mr. J. H. Croft, Jr., of Varna, Ill. Engraving prepared from sketches from life by Burk.



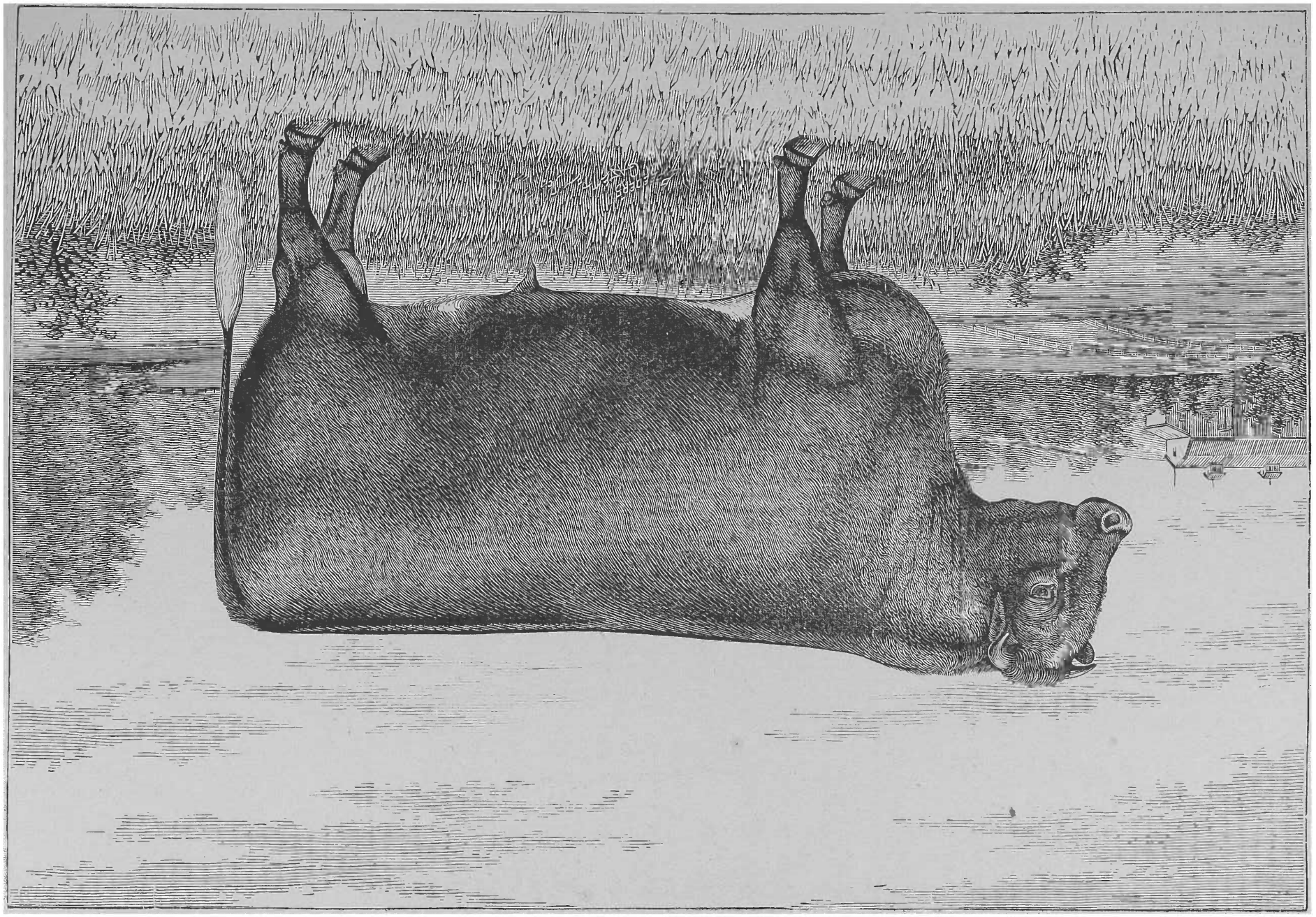
SHORT-HORN COW COUNTESS BICKERSTAFFE AND CALF.

Color, red; calved March 4, 1881; bred by W. T. Hearne, Lee's Summit, Mo.; sold by him to Col. T. S. Moberley, Richmond, Ky.; got by Kirklevington Oxford 32983, dam Lady Bickerstaffe 4th (A. H. B., Vol. XXVI) by Bell Duke 22107; 2d dam Lady Bickerstaffe 2d by Fulgens 23204; 3d dam imp. Lady Bickerstaffe by Duke of Hillhurst (28401), etc., in the Bell-Bates Bickerstaffe line. Engraved after a sketch from life by Burk.



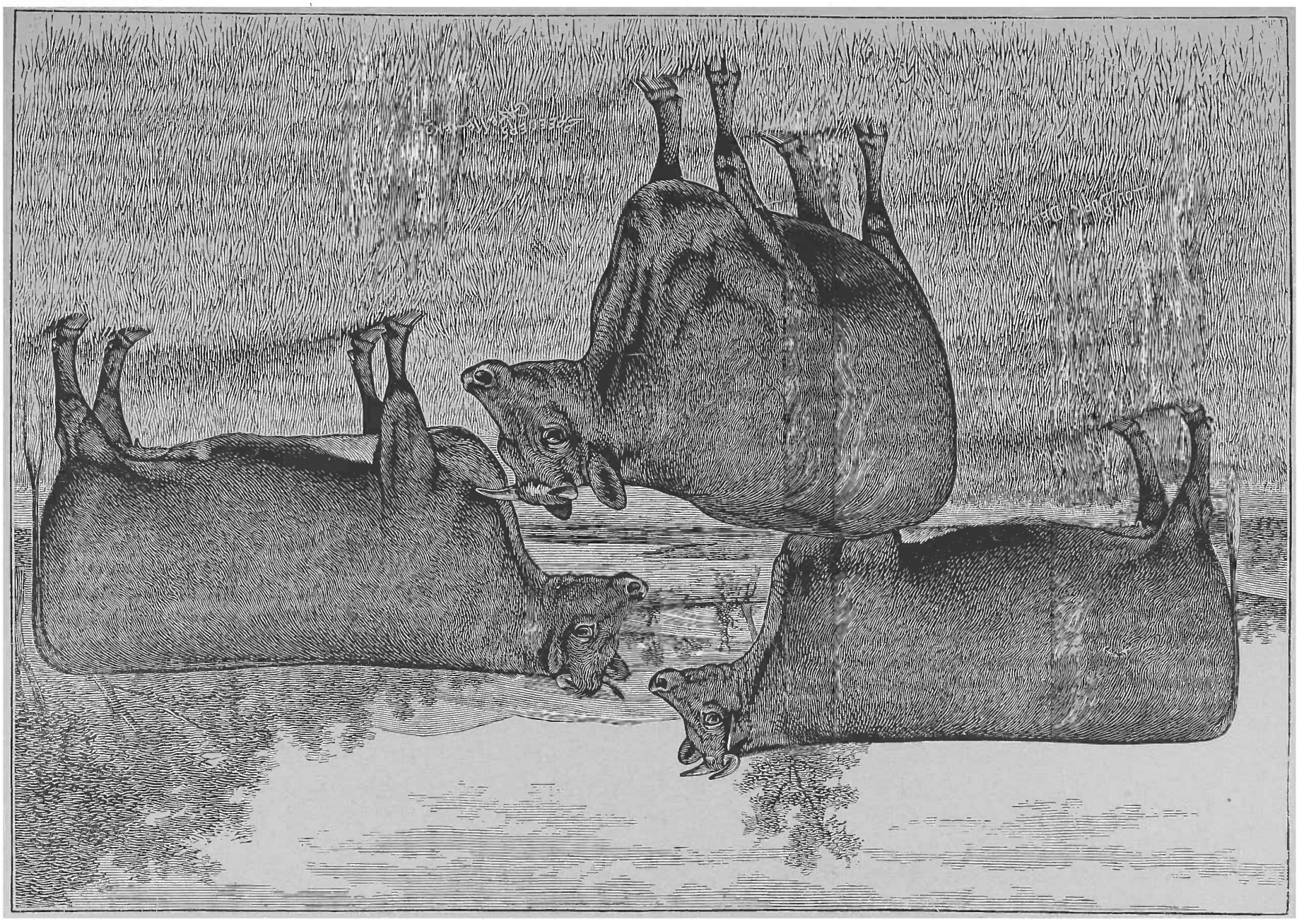
SHORT-HORN BULL DICK TAYLOR OF GLENWOOD 50737.

Color, red; calved Oct. 8, 1882; bred by Thomas & Smith, of North Middletown, Ky.; property of Messrs. C. C. Blish & Son, Lee Side Herd, Kewanee, Ill.; got by Geneva Bates 39075 (he by Royal Bates 36872 out of the Phyllis show cow Conquest 2d); dam Beck Taylor 6th (Vol. XX) by Thorndale Duke 15592 (Bates-topped Bloom); 2d dam Beck Taylor by the famous Vanmeter Young Phyllis show bull Dick Taylor 5508, etc., to imp. Young Mary by Jupiter (2170). Dick Taylor of Glenwood was shown with his get successfully at the fairs of 1886. Among his triumphs that year being sweepstakes at Iowa State Fair for bulls with their get. Our picture shows him in his two-year-old form, sketched from life by Burk.



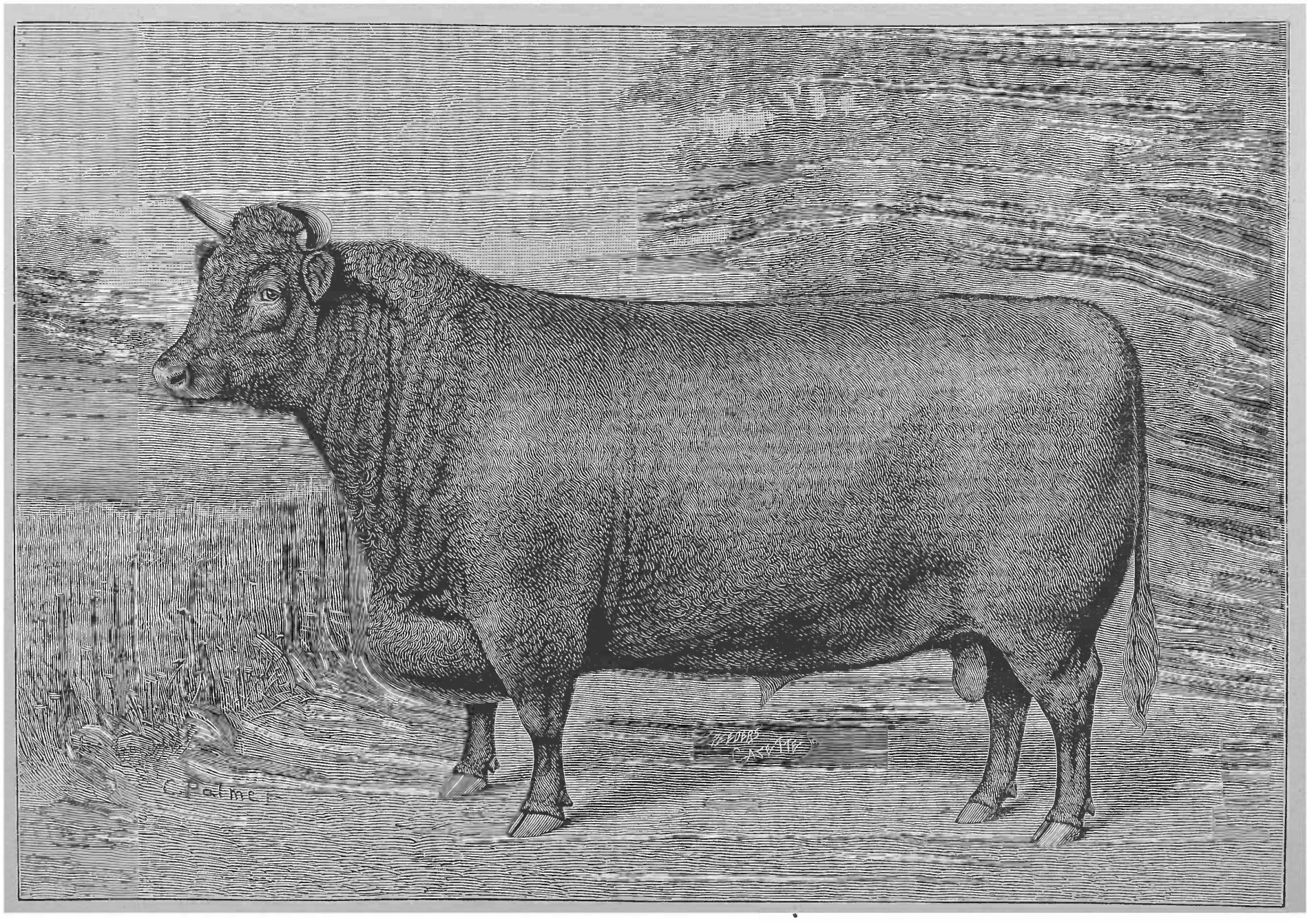
GROUP OF SHORT-HORN HEIFERS.

Rose of Richland 61st, Rose of Richland 64th, and Rose of Richland 65th (the heifers shown on the opposite page) are reds, belonging to a branch of the famous Rose of Sharon tribe, bred with great success by the Hon. Mark S. Cockrill, of Nashville, Tenn., the owner of the leading Short-horn herd of the States south of Kentucky. (See A. H. B., Vol. XXVII.) The first-named heifer (shown in the foreground) was the last calf sired by Mr. Cockrill's Duchess bull 5th Duke of Hillhurst 22805, and had for dam Rose of Richland 5th by Derby 7800. The 64th and 65th of same name are own sisters in blood, both being sired by the Renick Rose of Sharon bull Poppy's Airdrie 40316, out of Rose of Richland cows by the 5th Duke of Hillhurst. Sketched from life by Burk (1884).



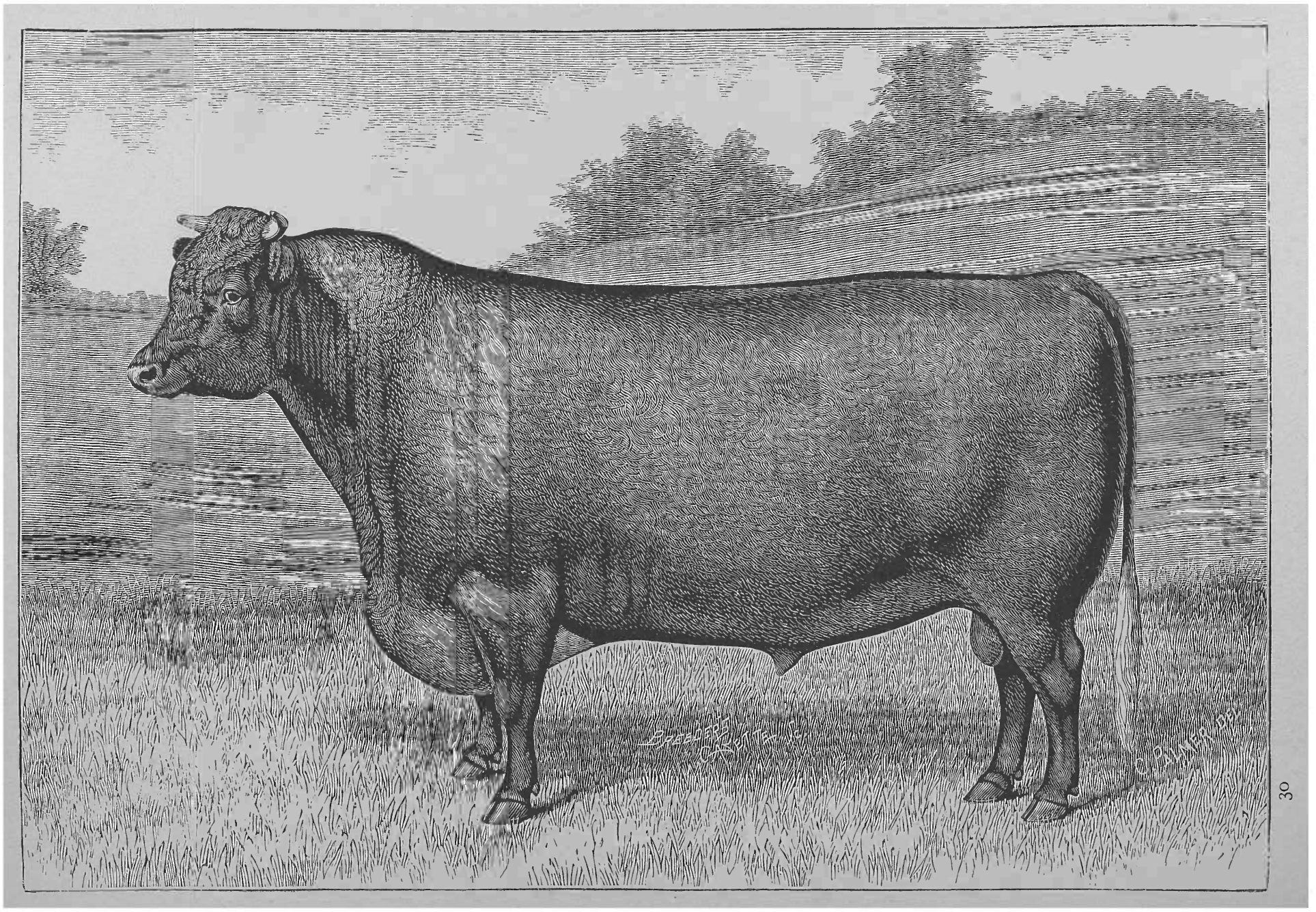
SHORT-HORN BULL BARON VICTOR 42824.

Color, red; calved Nov. 9, 1880; bred by Amos Cruickshank, Sittyton, Aberdeenshire, Scotland; imported by James I. Davidson, Balsam, Ontario, Can.; property of Col. W. A. Harris, Linwood, Leavenworth Co., Kan.; got by Barmpton (37763), dam Victoria 58th by Pride of the Isles (35072); 2d dam Victoria 43d by Champion of England (17526), etc., through the Cruickshank-Victoria line to the famous Lady Maynard. Shown with his get at prominent Western fairs with success, and the chief stock bull at Linwood. Sketched from life by Palmer.



SHORT-HORN BULL 33D DUKE OF AIRDRIE 50833.

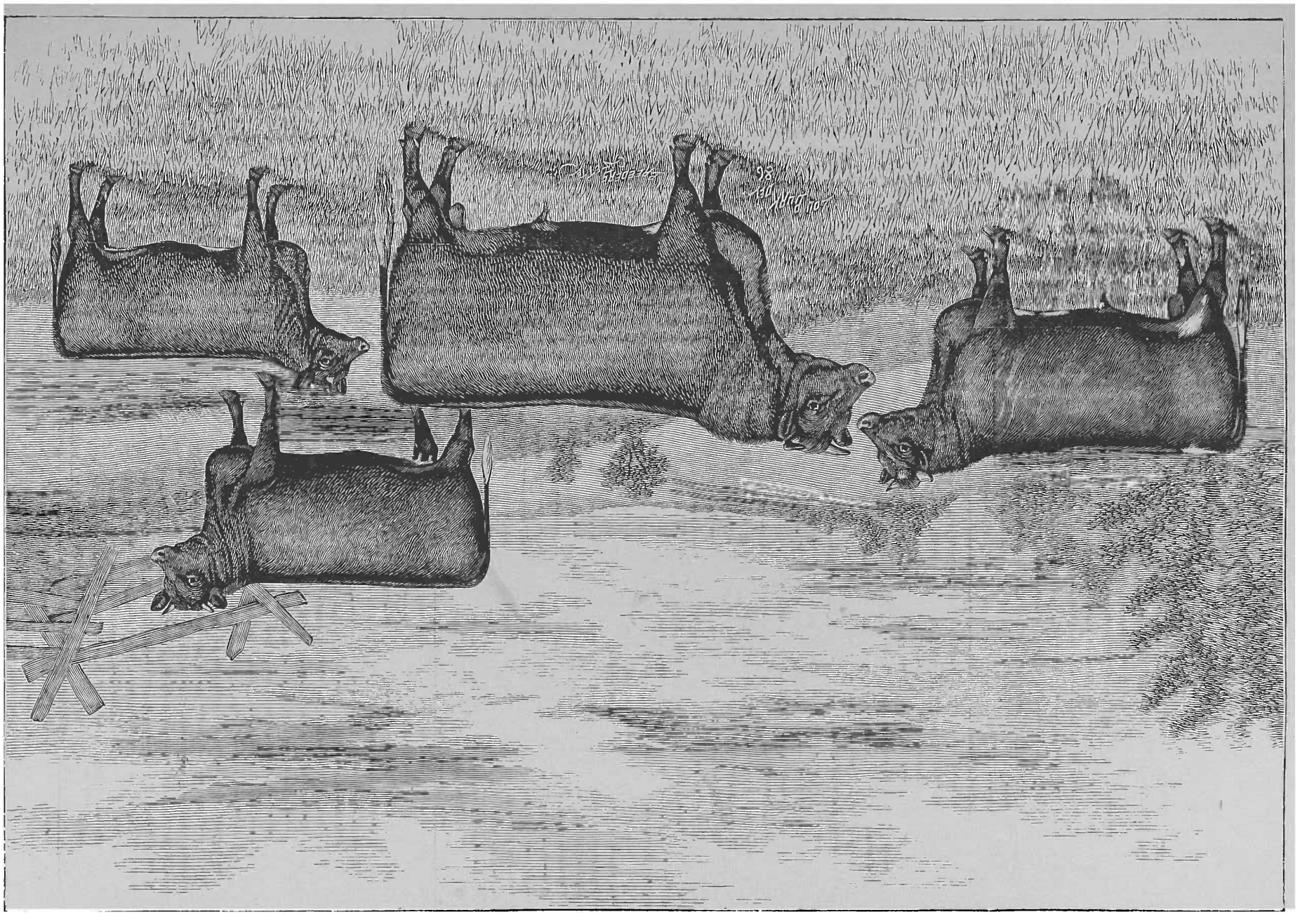
Color, red; calved Sept. 24, 1880; bred by A. J. Alexander, Woodburn Farm, Spring Station, Ky.; purchased at his sale June 24, 1882, by T. W. Harvey, Turlington, Neb., for $2,650; bought at public sale at Dexter Park, Chicago, November, 1884, for $3,100, by Mr. Martin Flynn, of Walnut Grove, Des Moines, Ia.; got by 2d Duke of Barrington 50877 (Duke-topped Bates-Barrington), dam 21st Duchess of Airdrie (Vol. XXV) by exported 24th Duke of Airdrie (36460), [sold to Mr. Geo. Fox, of Elmhurst Hall, England, at a long price]; 2d dam 17th Duchess of Airdrie by 10th Duke of Thorndale (28458), etc., through Mr. Alexander's Airdrie branch of the Bates-Duchess tribe. Sketched from life by Palmer.



30

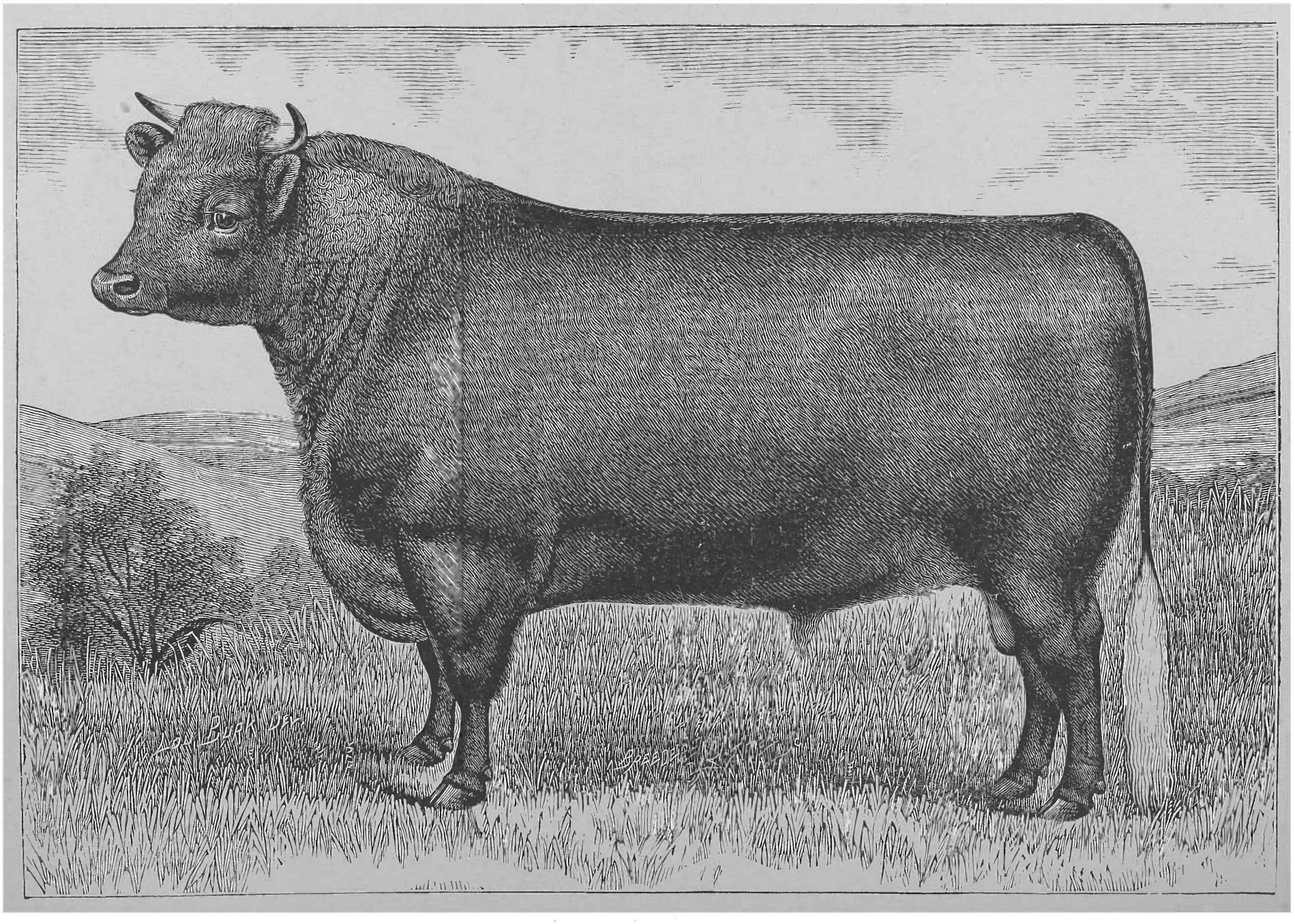
SHORT-HORN BULL DOUBLE GLOSTER 55406 WITH THREE OF HIS GET.

Imp. Double Gloster 55406 (49383) is a red of Feb. 11, 1883; bred by Amos Cruickshank, Sittyton, Aberdeenshire, Scotland; imported as a calf by James I. Davidson, Balsam, Ont.; selected by Col. W. A. Harris, of Linwood, Kan., for use in his herd, but transferred to the Blue Valley ranch of Wm. P. Higinbotham, Manhattan, Kan., at a cost of $1,000; got by Barmpton (37763), dam 24th Duchess of Gloster by Lord of the Isles (40218); 2d dam 21st Duchess of Gloster by Barmpton Prince (32995), etc., through Champion of England, Lord Raglan, The Baron, imp. Duke of Gloster, and Usurer to Earl Ducie's Chaff, a lineal descendant of the famous old-time cow Robert Colling's Magdalena by the $5,000 Comet (155). The young bull on the left is Grand Duke of Gloster, and the heifers on the right 6th and 10th Grand Duchesses of Gloster; all sired by the imported bull from cows in the Blue Valley Herd. Sketched from life by Burk, summer of 1886.



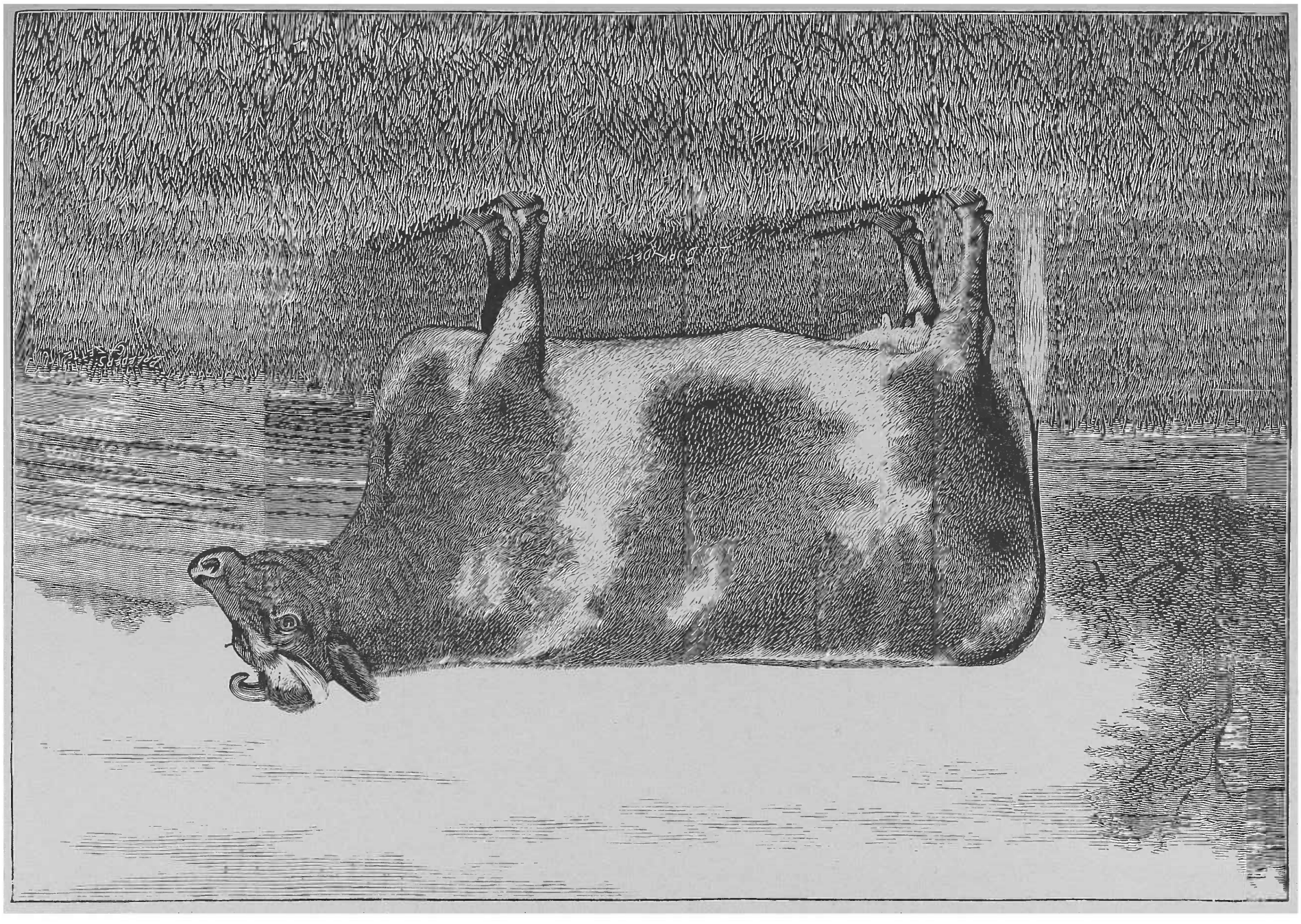
SHORT-HORN BULL 11TH DUKE OF ATHOL 38284.

Color, red; calved Nov. 1, 1880; bred by J. N. Brown's Sons, Grove Park, Berlin, Sangamon Co., Ill.; property of Col. W. H. Fulkerson, Jerseyville, Ill.; got by Atlantic 31658 (of the Grove Park Illustrious show family), dam Lady of Athol 11th (Vol. XVIII) by Knightley Wiley 26989; 2d dam Lady of Athol 9th by Oxford Bates 24210, etc., to the imported Bates-Barrington cow Lady of Athol by Duke of Athol (10150). Sketched from life by Burk.



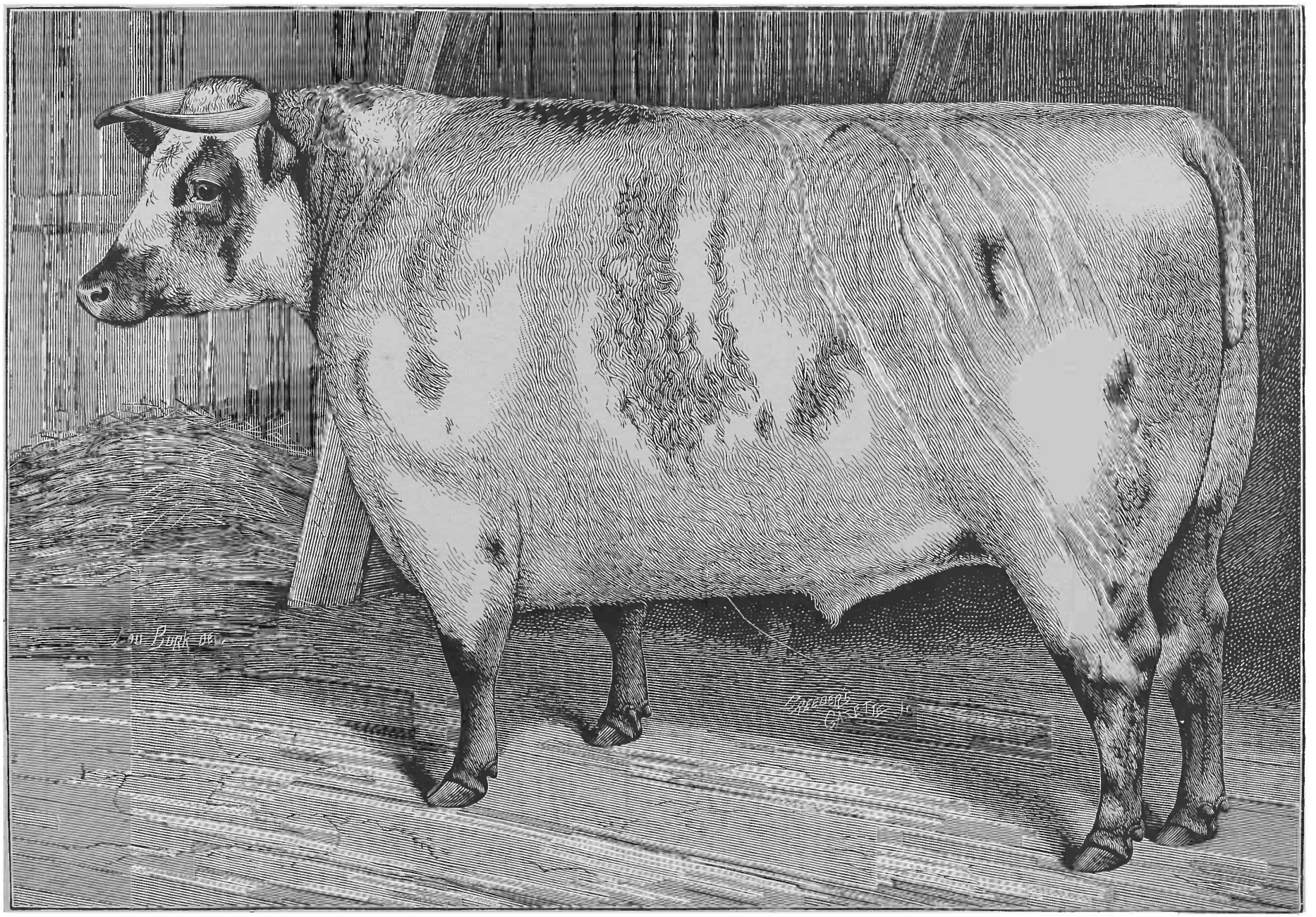
SHORT-HORN COW WATER SPRITE.

Color, roan; calved Jan. 25, 1874; bred by Charles E. Coffin, Muirkirk, Md.; sold by him to A. B. Conger, Haverstraw, N. Y.; by him to Albert Crane, Durham Park, Kan., and by him to Messrs. Bill & Burnham, Manhattan, Kan.; got by the imported Booth bull Lord Abraham (29056), dam Water Nymph (Vol. XII) by imp. Royal Briton (27351); 2d dam Water Lily (bred by W. Torr, of Aylesby Manor, England, and imported by Walcott & Campbell, of New York Mills) by the famous Breastplate (19337). The family to which this cow belongs is one of the most distinguished in Booth Short-horn history, the foundation being the Bates-bred Waterloos, which Mr. Torr topped out (with great success) by the best Booth sires. No less than forty females of this family were entered in Mr. Torr's catalogue of 1868, and at the Aylesby sale in 1875 twenty-one head of this sort sold for over $25,000, an average of about $1,200 each. Sketched from life by Burk, 1883.



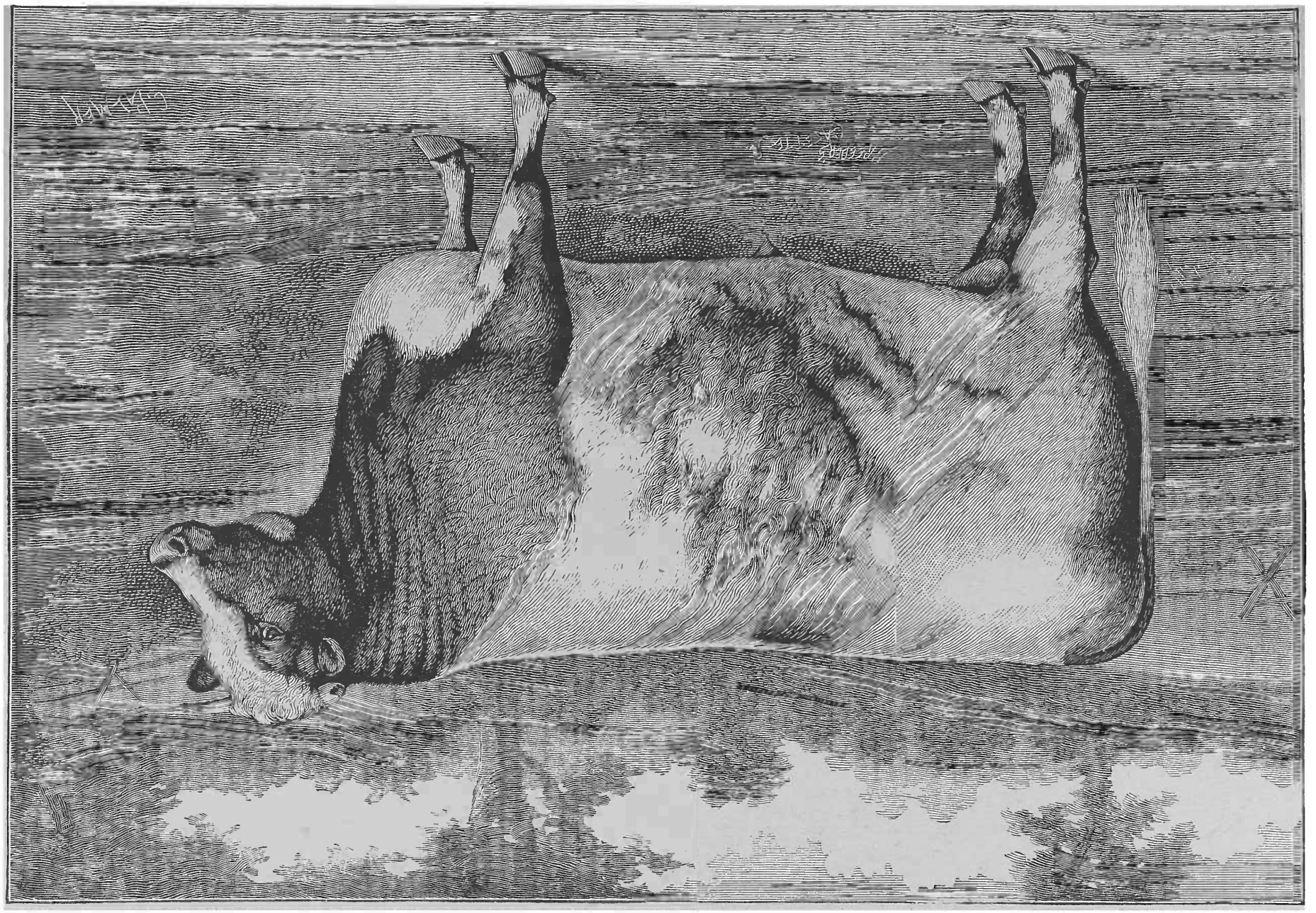
PURE-BRED SHORT-HORN BULLOCK SCHOOLER.

Color, roan; calved Dec. 16, 1881; bred by Mr. B. P. Schooler, of Bourbon Co., Ky.; fed and exhibited at the Kansas City and Chicago Fat-Stock Shows of 1883, 1884, and 1885, by Messrs. Morrow & Renick, Clintonville, Ky.; got by the Renick Rose of Sharon bull 10346 Poppy's Airdrie, dam the Young Mary cow Miss Byron by Frank Hunt 5650; 2d dam Alice Byron by Princeton 2d 6072, etc. A prize-taker; one of the most noted steers of the Short-horn breed ever exhibited at these shows, and, while not so successful a winner as the remarkable white Bow Park bullock Clarence Kirklevington, in the opinion of nearly all good judges entitled to rank as one of the best bullocks ever seen at these shows. His weight at 1,425 days (three years) was 2,210 lbs. Sketched from life by Burk, 1885.



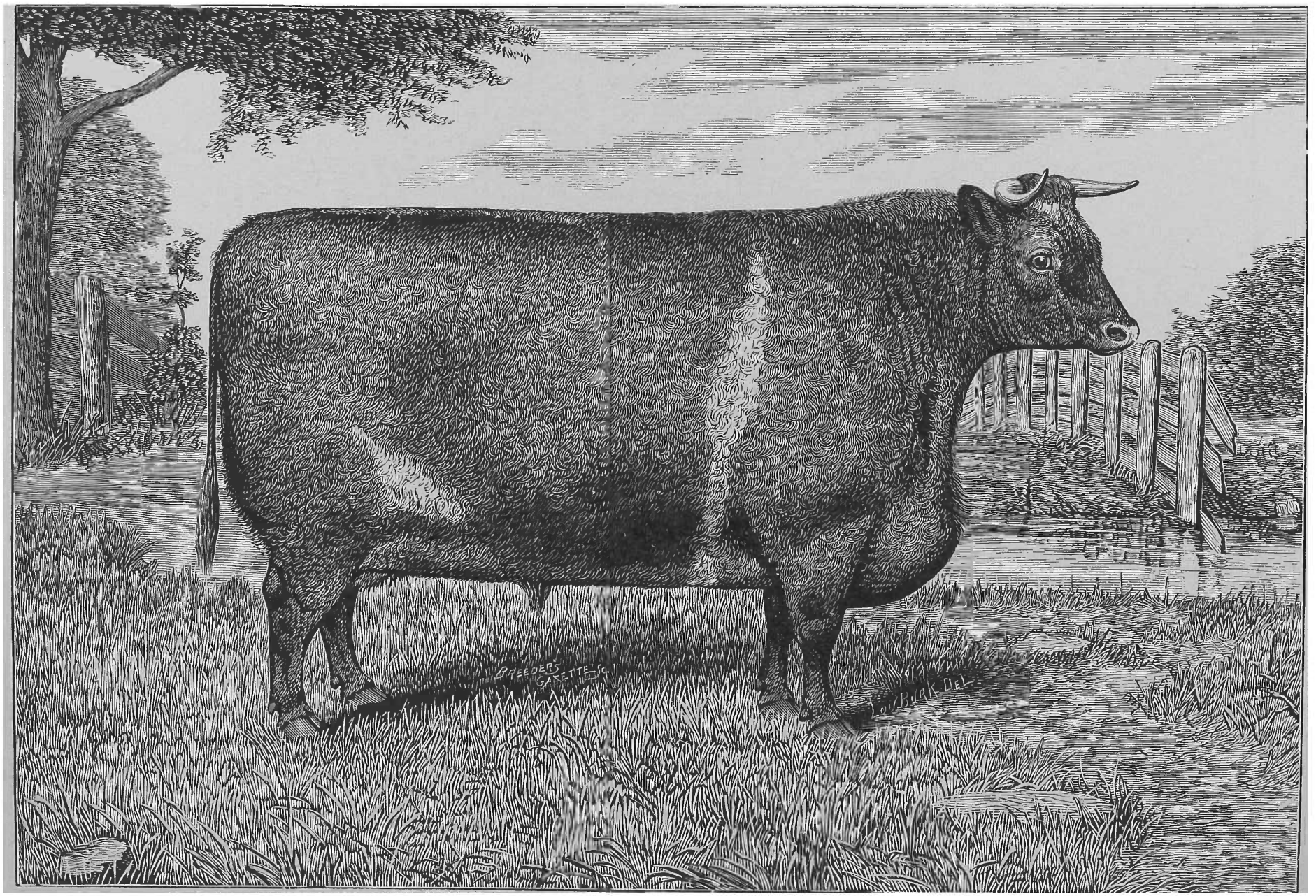
PURE-BRED YEARLING SHORT-HORN BULLOCK CLEVELAND.

Color, roan; bred and shown at the American Fat-Stock Show of 1885 by Messrs. Elbert & Fall, Albia, Ia.; got by the roan Woodburn-bred Mazurka bull Duke of Hazelhurst 45854, dam the red Josephine cow Red Daisy (A. H. B., Vol. XX). Cleveland was one of the sensational steers at the Show of 1885, gaining first prize in his class and winning the Short-horn championship of the hall against all ages. He was shown at 497 days old at a weight of 1,290 lbs., an average gain per day from birth of 2.59 lbs. Sketch from life by Palmer.



GRADE SHORT-HORN BULLOCK TOM BROWN.

Color, red, with white marks; bred, fed, and exhibited at the American Fat-Stock Show by the Hon. D. M. Moninger, Galvin, Ia., winner of the three-year-old championship of the show of 1882, against all breeds and crosses. He was shown as a member of Mr. Moninger's famous "Crimson" herd of Short-horn bullocks at the show of that year, with a weight of 1,945 lbs. at 1,174 days old, and was slaughtered by Messrs. Eastland & Duddleston, of Chicago, who certify that he netted 70.71 per cent dressed meat to live weight. (See the *Breeder's Gazette*, April 5, 1883.) Sketched from life by Burk.


BREEDERS GAZETTE

GRADE SHORT-HORN BULLOCK McMULLIN.

Color, red; fed and exhibited at the American Fat-Stock Show by Mr. John D. Gillette, Elkhart, Ill.; bred from a stock of Short-horns maintained many years by Mr. Gillette, and champion of the show for the years 1881 and 1882. Only one other beast has had the honor of winning this trophy twice, and he a Kentucky Short-horn bullock (Nichols). McMullin was a remarkably fine-loined steer, his chief strength lying in his "top." His weight at the show of 1881 was 2,095 lbs., and in 1882, 2,565 lbs. Sketched from life by Burk, 1882.

CHAPTER X.

HEREFORD CATTLE.

For full one hundred years the rivalry between the Hereford breed and the Short-horn or Durham has been hot and unrelenting; and in the history of the origin and early improvement of the two breeds there is a striking similarity, the methods of the first great improvers of both breeds having been substantially the same. The remote origin is obscure in both cases, but use of the best material at command, with an ideal standard of excellence constantly kept in view and adhered to with dogged pertinacity by men of rare good judgment, was the touchstone of success in both cases. The rivalry between the partisans of the two breeds appears to have been peculiarly active and energetic in the early part of the present century, especially between those acknowledged champions of either breed, Thomas Bates and John Price; and challenges for competitive shows of equal numbers of cattle were frequent.

From some cause or other, however, for nearly fifty years after the first quarter of the present century the Hereford breeders appear to have ceased to be the aggressive champions of their favorites that their predecessors had been; and aside from the limited area of Herefordshire and a few of the immediately adjoining counties the Short-horns appear to have largely monopolized the attention

of the outside world so far as bovine improvement was concerned. Whether this was due, as is alleged by Hereford breeders, largely to the fact that the nobility of England set the fashion in favor of Short-horns which was blindly followed by outsiders, or to a real superiority in the latter breed as the two then existed, as is claimed by the latter, I shall not attempt to decide. But certain it is that after the Short-horn breed had apparently conquered the field and its partisans felt secure in their possessions, some fifteen years ago Hereford breeders suddenly again assumed the aggressive, and since then the progress of the breed in popular favor throughout the world has been surprisingly rapid, especially in this country.

It is claimed by some well-informed and careful observers that this period of comparative inaction among Hereford breeders — say from about 1835 to 1870, when there was but little demand on the part of the outside world for Hereford breeding stock — was peculiarly favorable for constant improvement in the breed, the limited demand leaving no incentive to the use of any but the choicest specimens of the breed for the purposes of reproduction, while during the same period the great and constantly increasing popularity of the Short-horns led to the use of nearly all the males of that breed, whether good, bad or indifferent, for breeding purposes; and thus the very popularity of the one, it is claimed, brought about deterioration, while the lack of it afforded the opportunity for marked improvement in the other. So that when the attention of outsiders who were not prejudiced for or against either breed was again directed to the merits of the Herefords they found them wonderfully improved over the form they had when they apparently abandoned the field to the "red, white, and roan," about 1825, while

a corresponding tip of the beam in the opposite direction, it is alleged, had befallen the Short-horns. But while the great improvement of the Hereford during the past fifty years is generally admitted, partisans of the Short-horn are not willing to concede that there has been any falling off in the merits of their favorites.

The Hereford breed takes its name from the County of Hereford, where it originated, and in the recently published "History of Hereford Cattle," by Macdonald and Sinclair, the authors, after giving in considerable detail the various theories and traditions touching the origin and history of the breed, sum up as follows:

"There is a certain degree of unanimity among the authors who have been quoted in thinking that the Herefords were originally a self-colored race of cattle like the Devons and Sussex, and that they were derived from the same source. But the earliest writer who went into the subject in detail, namely, Marshall—who saw the breed on its native pastures in 1788—described the color as 'a middle red with a bald face, the last being esteemed characteristic of the true Herefordshire breed.' This statement points to the establishment of 'bald' or white faces at a period considerably antecedent to the close of the eighteenth century, when Marshall made his survey, and the peculiar markings were not confined to one or two select herds, but had become, although not universal, so widely diffused as to be characteristic even of the oxen of 'the true breed' sold to the Gloucestershire graziers. * * *

"One of the first efforts to assign to a specific cause the superior quality and characteristic color of the Hereford breed was made by Mr. Thomas A. Knight, to whose testimony, as we have already endeavored to show, high importance is attached. That, as

Mr. Knight asserts, Lord Scudamore, who died in 1671, introduced into the County of Hereford from Flanders a number of red cattle with white faces is, we think, unquestionable, and it was to this importation that Mr. Knight attributed the superior qualities of the breed. But, as has already been remarked, it should be clearly understood that Mr. Knight does not assign the origin of the breed itself to this importation, but merely traces the development of certain merits in the Hereford cattle to the influence of the animals that came from Flanders."

It is also pointed out that a portion of the present County of Hereford formerly lay within the boundaries of Wales, and it is thought more than probable that the blood of the White Welsh breed became diffused to a greater or less extent among the cattle stock of Herefordshire even before the Flemish importation, and this of itself would have created a natural predisposition to white markings before the introduction of white-faced cattle from the continent by Lord Scudamore.

Mr. Benjamin Tompkins, who was born in 1745, has frequently been referred to by writers upon cattle as the founder of the Hereford breed; but there is abundant evidence showing that his grandfather before him, who died in 1723, was a famous breeder of cattle of superior excellence, and in his will, executed 1720, he especially devised a cow called Silver, with her calf, to his son Benjamin, who is spoken of in "Notes of the History of the Tompkins family," by Mr. Galliers, as "the first great cattle-breeder"; but contemporaneous with him, and perhaps equally noted, was Mr. William Galliers, and in the "Notes" above referred to it is stated that about 1760 both Benjamin Tompkins and William Galliers, who were fast

friends, "each possessed herds of noted cattle, the result of years of thought and labor. They seem to have bred from each other's stocks, and it is understood that conjointly and separately they made excursions to different parts of England in search of blood to improve them." The Mr. Benjamin Tompkins first mentioned (as having been born in 1745) was a son of this Benjamin Tompkins, the coadjutor of Mr. William Galliers. We thus have three generations of the Tompkins family all working upon the same stock to effect improvement in the breed of Hereford cattle, the second of the line having been relatively quite as prominent in his day as his son Benjamin Tompkins, the younger, afterward became.

But contemporaneous with the second Tompkins were other noted breeders, such as Tully, Skyrme, Haywood, Yeomans, and Galliers, the latter perhaps equally as distinguished as was Mr. Tompkins himself; and of Mr. Tully it is recorded that he bred the ox that won the first prize at the Smithfield Show of 1799. In commenting upon the work of these early breeders the editors of the Hereford history before referred to tell us that: "The main object of these old breeders seems to have been—at least at the beginning of their operations—to rear large, heavy cattle, that after having been worked in the plow, and having 'taken an equal share in the labors of the harvest,' would fetch a good price from the graziers of the Midland counties, who assembled in large numbers at the Hereford October Fair. By them they were purchased with the view of being fattened for the butcher or, as Duncumb puts it, 'perfected for the London markets.' There does not seem to have been much uniformity about their cattle, either in respect of form or color. As to the latter point Marshall, it is true, says a bald face was charac-

teristic of the true Herefordshire breed, while Duncumb remarks that the 'prevailing' color was a reddish brown with white faces. Within these descriptions there was, of course, room for much diversity, which doubtless existed. The leading breeders would appear to have had their favorite sorts, and these varieties had warm admirers and keen partisans. At a very early period the system of in-and-in breeding was to some extent adopted, and a separate character was established for the various 'breeds,' as they were called; the 'trade-mark' chosen for each being the color markings. Thus there were the Tompkins, Tully, Skyrme, Galliers, and Haywood 'breeds.' The selection of a uniform type was not for many years accomplished, and the struggle for supremacy, begun during the last century, was continued until a comparatively recent date." —("History of Hereford Cattle," page 49.)

While to rear oxen which should be profitable beasts of labor appears to have been one of the chief points aimed at by these early breeders, Benjamin Tompkins, the younger, gave special attention to the beef-producing and grazing qualities of his cattle, and to effect improvement in these particulars he ignored uniformity in color entirely, selecting good cows wherever he could find them, but using only bulls of his own breeding. Commenting on the influence of Mr. Tompkins' selections it is stated in the history so often referred to that "What Tompkins did for the Herefords was to develop their early-maturing properties, shorten their legs, refine their bone, improve their beef points and the quality of their flesh, and impart to them more thoroughbred character and impressiveness. His disregard of color, in the opinion of some people, was a mistake, and it is almost certain that if he had aimed at producing

uniformity in this particular the consolidation of the breed would have been much more rapidly accomplished, and the waste of energy entailed by the struggle between the admirers of the white-faced, the mottle-faced, and other varieties, which subsequently occurred, would have been avoided."

Following after Benj. Tompkins, the younger, who died in 1815, came another breeder of great eminence, Mr. John Price, who had the cows for his foundation stock from Mr. Tompkins in 1804, and who followed that gentleman's methods of breeding, but with much greater attention to pedigree. There were many other breeders of note contemporaneous with Mr. Price, but space forbids further details, and those desiring further particulars are referred to the valuable "History of Hereford Cattle," by Macdonald and Sinclair, from which I have so freely quoted.

It will be seen from the foregoing that the Hereford from its earliest history has been distinguished as a grazing breed, and that the efforts of its first great improvers were to perfect it in fattening qualities and to secure earlier maturity, the latter especially having been a point to which but little attention had been paid up to the time of Tompkins, the younger. And while it is recorded that many of the cows in the earlier days possessed superior dairy qualities, their milk being especially rich in cream, yet this point appears to have been entirely ignored in the efforts for improvement in the breed; so that while the partisans of the Hereford of today claim for their favorites unsurpassed excellence as a beef-producing breed and unequaled quality as grazers they do not lay claim to any special adaptation to the uses of the dairy. The white face, with more or less of white on the top line, especially

from the shoulders forward and also on the belly, the balance of the body covered with a heavy growth of red hair, varying from a pale to deep red and frequently quite curly, remains today as it was a hundred years ago, a characteristic of the breed.

The first importation of this breed to America of which we have any account was made by Henry Clay, of Kentucky, in 1817, and consisted of two bulls and two cows, one of the former dying before he reached his destination in Kentucky. It is interesting to note that these Herefords came over in the same ship with the first recorded importation of Short-horns, that of the Sanders importation of 1817, referred to on page 208 of this volume; but the progeny of these Herefords were soon lost sight of. In 1824 a Hereford bull and heifer were presented to the Massachusetts Society for the Promotion of Agriculture by Admiral Sir Isaac Coffin, but the progeny of these, like the Kentucky importation of 1817, have likewise passed out of view. The first importation of cattle of this breed which attracted much attention was made in 1840 by Messrs. Erastus Corning and W. H. Sotham, and consisted of five bulls and seventeen cows and heifers, brought to the State of New York; and this importation, it may be said, constituted the foundation stock for the Hereford breed in this country.

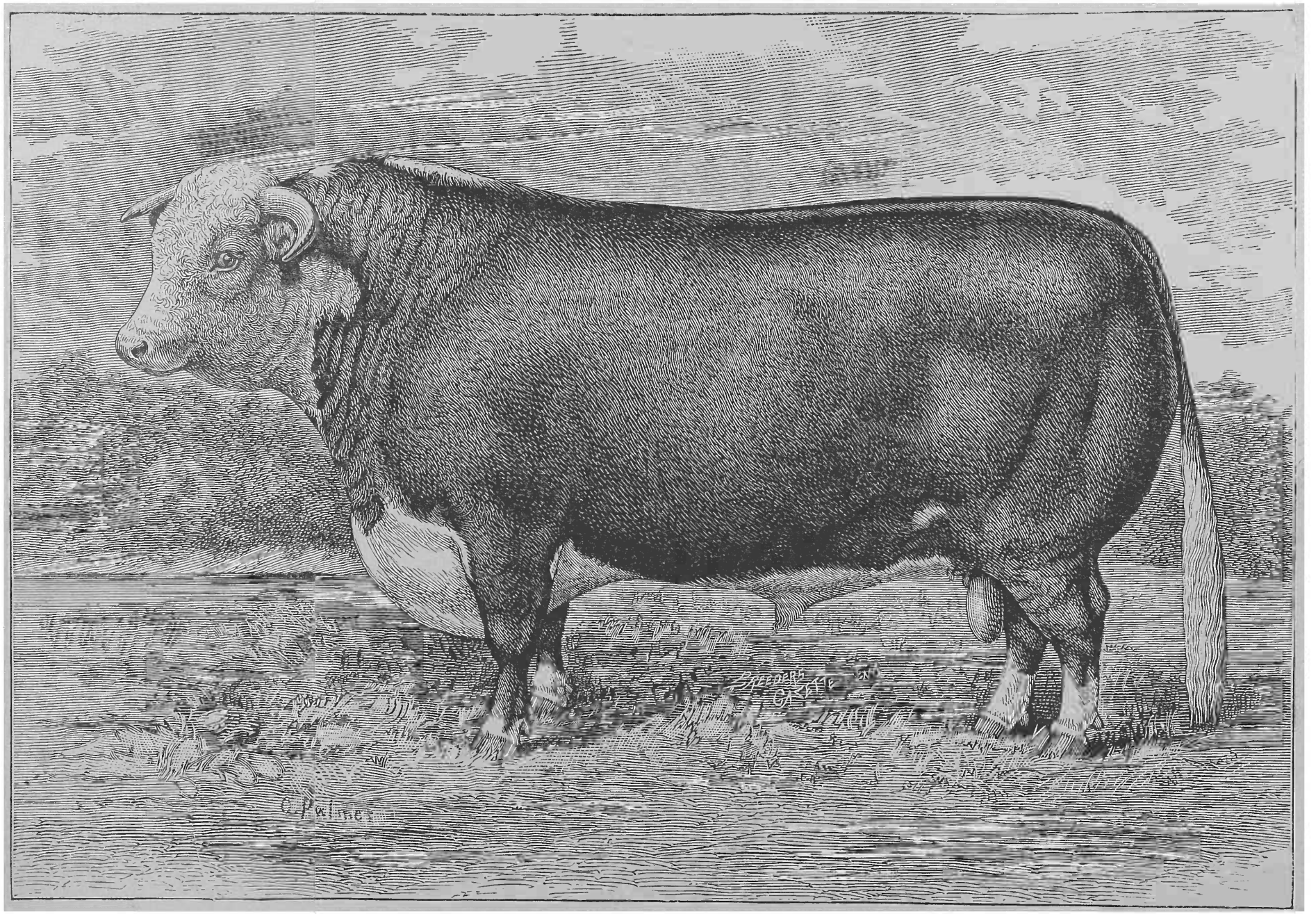
Their progress in popular favor, however, was for a long time very slow, and it was not until the great demand sprung up for bulls of the improved breeds to cross upon the so-called native stock of our Western plains that the attention of American breeders began to be largely turned to the especial merits of the Hereford breed for grazing purposes. Since that time, dating from about the year 1875, the breed has rapidly advanced in public favor, and immense

numbers of the very best specimens that could be found in England have been imported to this country; and now, as in the days of John Price and Thomas Bates, they are again warmly contesting the ground for popular favor with the Short-horns.

There was no herd book for this breed until 1846, at which time Mr. T. C. Eyton began the work of gathering up pedigrees, and he issued the first volume of the Hereford Herd Book in July of that year. This volume contained the pedigrees of 551 bulls, no cows being included; and its editor remarks that prior to that time Mr. Price, of Ryall, "was about the only breeder who had kept a systematic record of his breeding operations." The pedigrees in this volume were divided into four classes — mottle face, white face, gray, and light gray — which give some idea of the divisions upon the color line that existed in the Hereford camp even at that late day. Vol. II of this work was not issued until six years later, and the work was then abandoned by its original projector. Mr. W. Styles Powell then took it up and issued the first part of Vol. III, but died soon afterward, and finally Mr. Thomas Duckham, to whom the Hereford breeders of the world are largely indebted for much valuable service, took up the work and carried it on for several years thereafter. Up to this date (October, 1886) sixteen volumes have been issued. The American Hereford Herd Book was instituted in 1881 by Mr. T. L. Miller, but it has since been turned over to the American Hereford Breeders' Association; Mr. Chas. Gudgell, of Independence, Mo., being Secretary of the Society and editor of its Herd Book. Five volumes of this work have been issued.

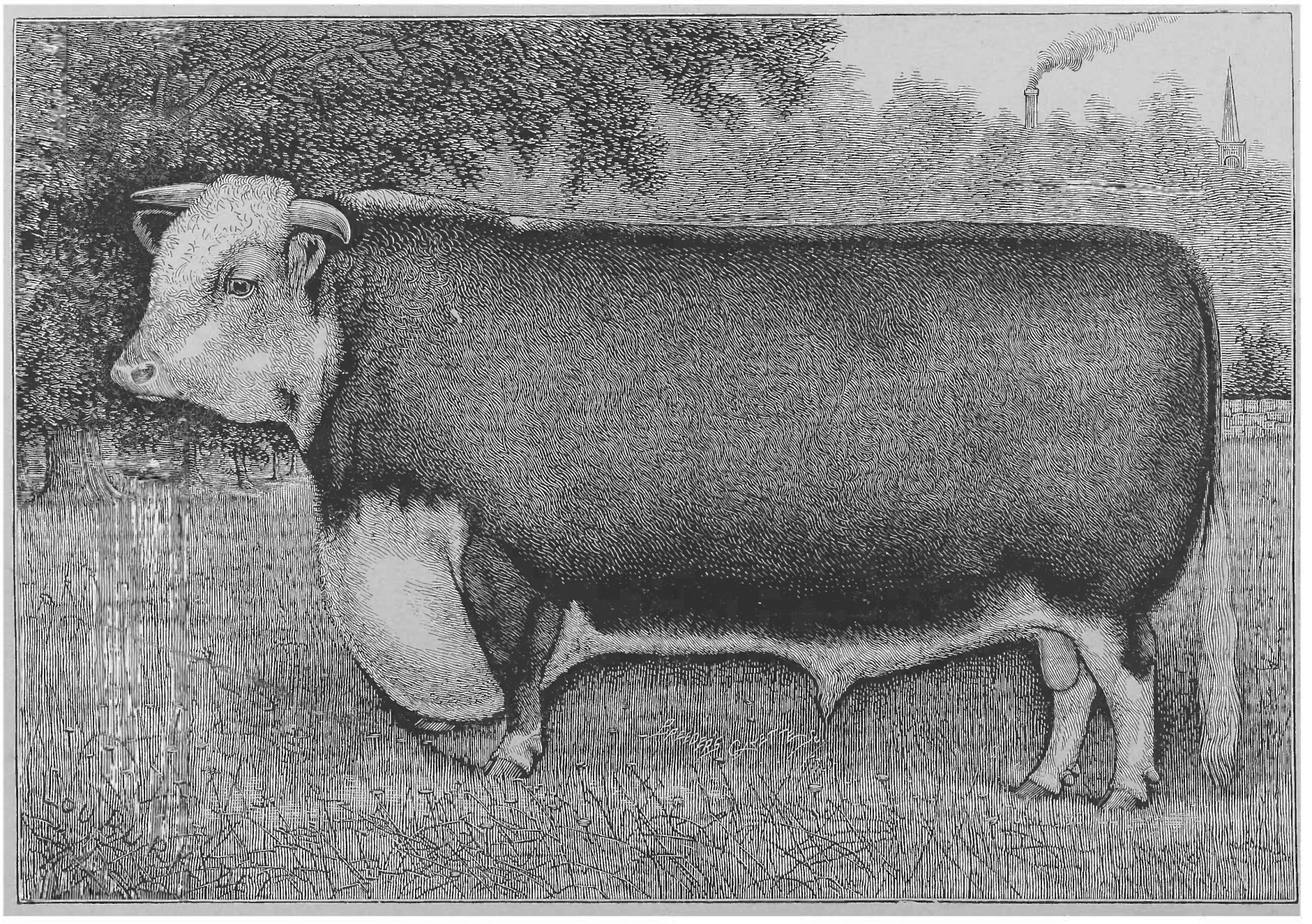
HEREFORD BULL THE GROVE 3D (5051).

Calved Nov. 5, 1874; bred by Mr. B. Rogers, The Grove, Pembridge, Herefordshire, England; sold by him to Mr. P. Turner, of The Leen, and purchased at his sale of 1883 by Mr. C. M. Culbertson, Newman, Douglas Co., Ill., for $4,150, who used him in his herd until the spring of 1886, when he was purchased by Mr. Adams Earl, Shadeland Farm, La Fayette, Ind., for $7,000, the highest price ever actually paid for a Hereford. His sire was the famous Horace (3877), a bull that was rescued from the block by Mr. John Price and freely used in his herd, making a reputation as one of the most successful sires known in Hereford history. The Grove 3d's dam was Blossom by Sir Thomas (2228), a cow sent by Mr. Rogers to be served by Horace after the fine fleshing character of the old bull's get had become apparent in his offspring. The Grove 3d is the sire of many of the most noted show animals of the breed, and while breeding with great uniformity all round has made a special success when crossed with cows sired by Spartan (5009); as witness Rudolph (6660), Cassio (6849), Royal Grove 21500, Hesiod (6481), and other well-known animals. Sketched from life by Palmer, showing the bull at eleven years old.



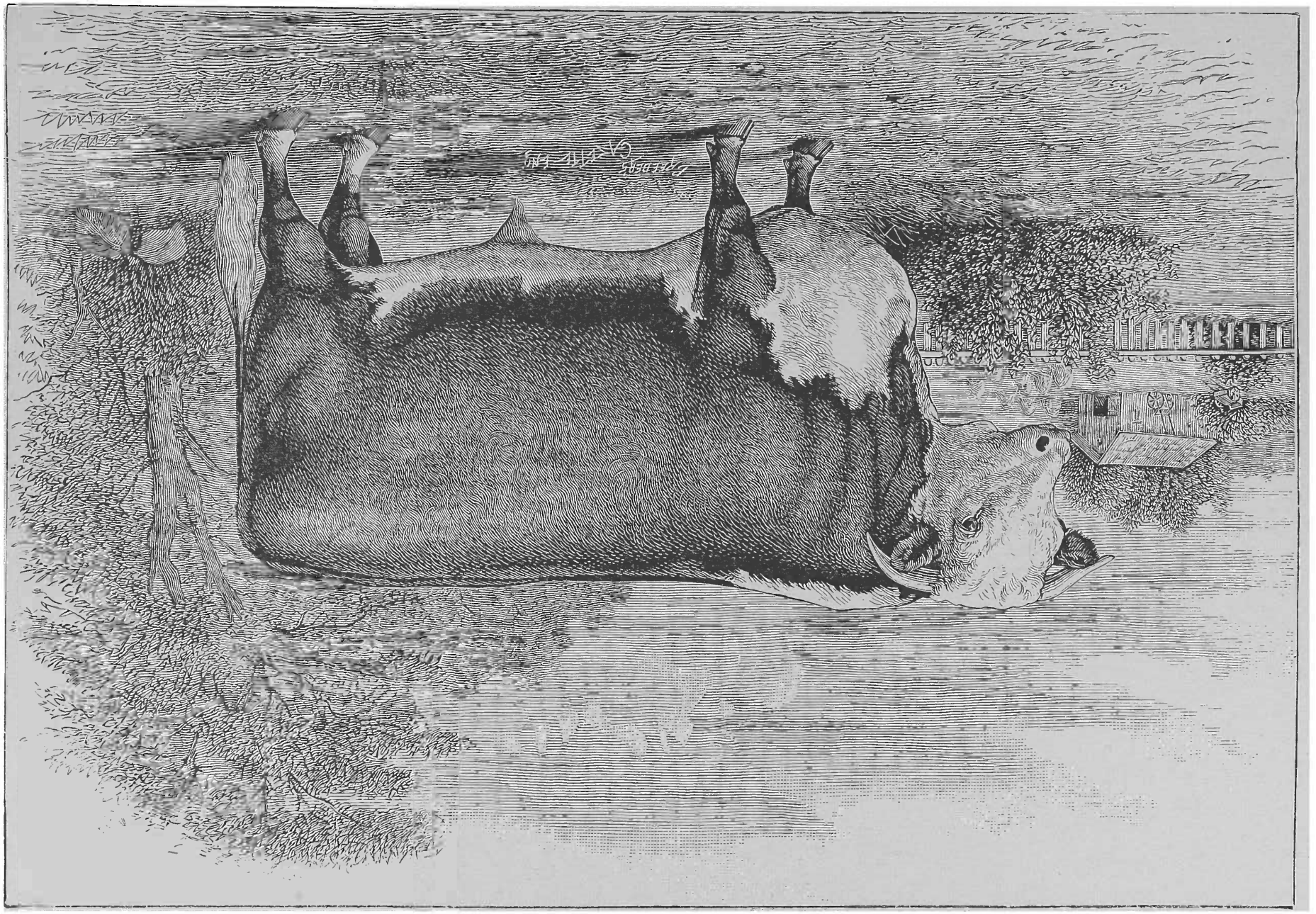
HEREFORD BULL ARCHIBALD (6290).

Calved May 3, 1880; bred by Mr. A. Rogers, The Rodd, Kington, Herefordshire, England; imported by George Leigh & Co., Aurora, Ill.; sold by them to J. O. Curry, of same place, and by him to his present owner, Mr. C. K. Parmelee, Desplaines, Cook Co., Ill., for about $6,000; got by Dolley (5875), [bred by Aaron Rogers and sired by Marquis of Waterford (5454), out of Lydia Lass 2d by Bismarck (3689), etc.]; dam Miss Chance 3d by the prize bull Grateful (4622), son of Sir Thomas (2228). Archibald is admittedly one of the best individual animals of the breed ever imported to America, and was a distinguished winner in England before brought to the United States. His development forward is most extraordinary, as will be seen by reference to drawing on opposite page. Sketched from life by Burk.



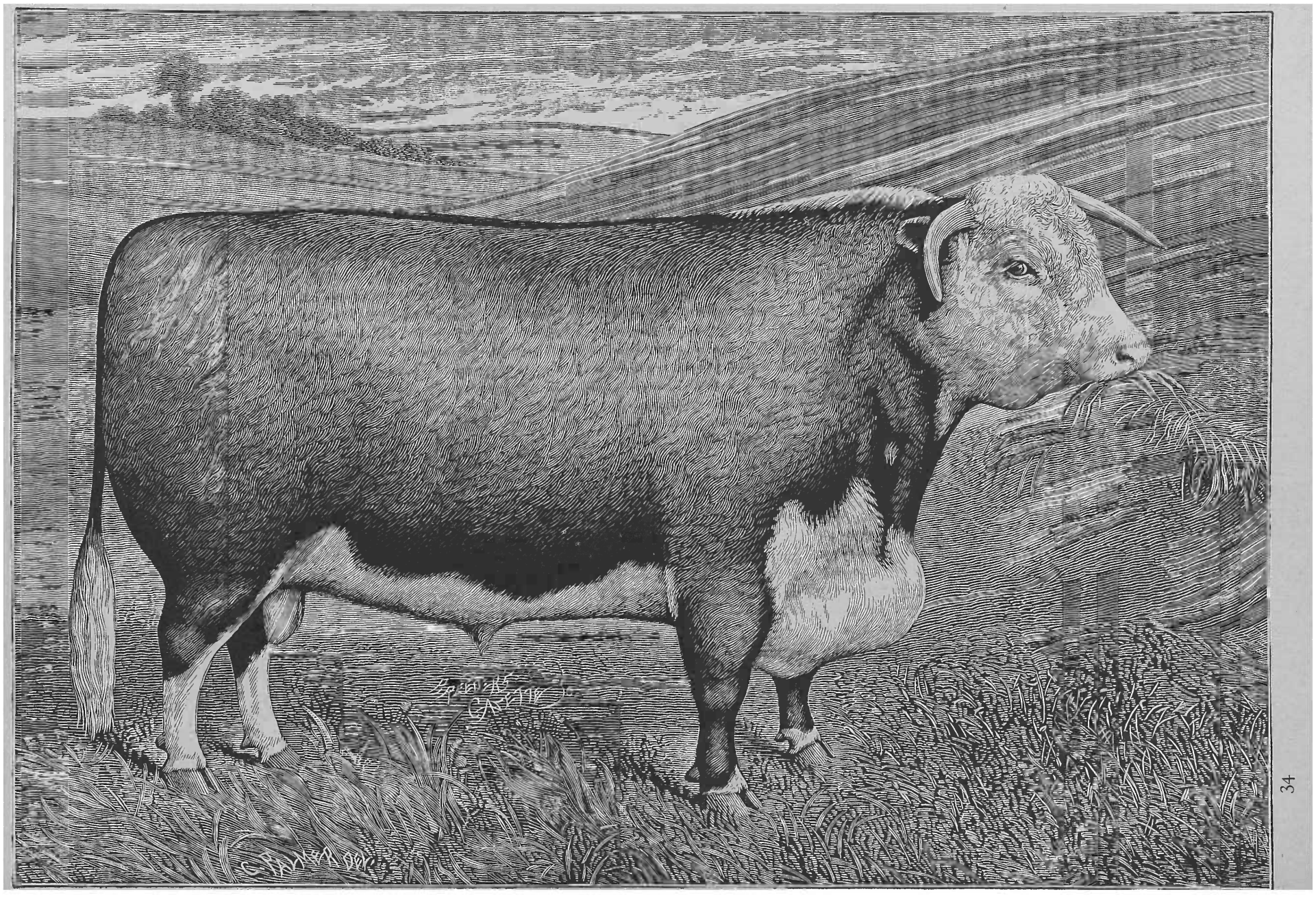
HEREFORD BULL WASHINGTON (8152).

Calved May 15, 1882; bred by Mr. A. E. Hughes, Wintercott, Leominster, England; property of the Iowa Hereford Cattle Company, Indianola, Ia.; got by Rudolph (6660) [a very famous prize-winning son of The Grove 3d, imported to America at a cost of $3,500], dam Plum 3d by Commander (4452). Washington was the "crack" two-year-old of the English show yards in 1884, has been exhibited with great success at many prominent American fairs, and his get are also winning ribbons in Western show yards. Engraving prepared from a lithographic drawing by A. M. Gauci, of England.



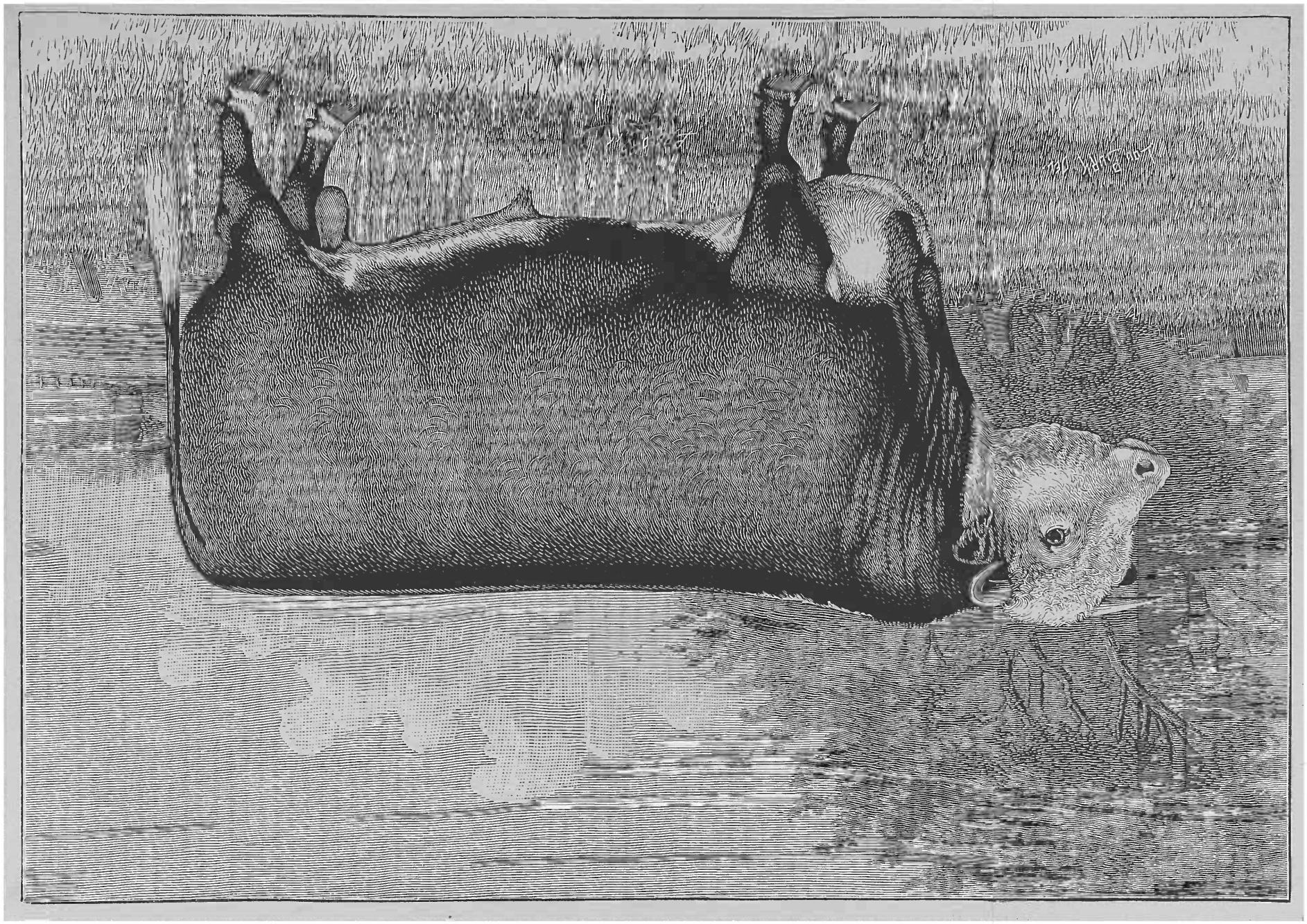
HEREFORD BULL SIR BARTLE FRERE (6682).

Calved July 4, 1880; bred by Mr. T. J. Carwardine, Stockton-bury, Leominster, England; imported August, 1882, and still owned by Mr. Adams Earl, of Shadeland Farm, La Fayette, Ind.; got by the celebrated Lord Wilton (4740), dam Tiny (a Carwardine cow owned by Mr. Earl, and dam also of the well-known sire of prize stock Tom Clark's Anxiety 3d) by Longhorns (4711); 2d dam Rose-bud by De Cote (3060), etc. Sir Bartle Frere made a brilliant record at the English shows of 1881 (including first at the Royal), and was put in active service at Shadeland immediately after his importation. Three steers of his get won first, second, and third prizes in the ring for yearling grades at the American Fat-Stock Show of 1885, and at the fairs of 1886 the bull, with several of his get from pure-bred cows, was a leading feature at prominent Western shows. Sketched from life by Palmer.



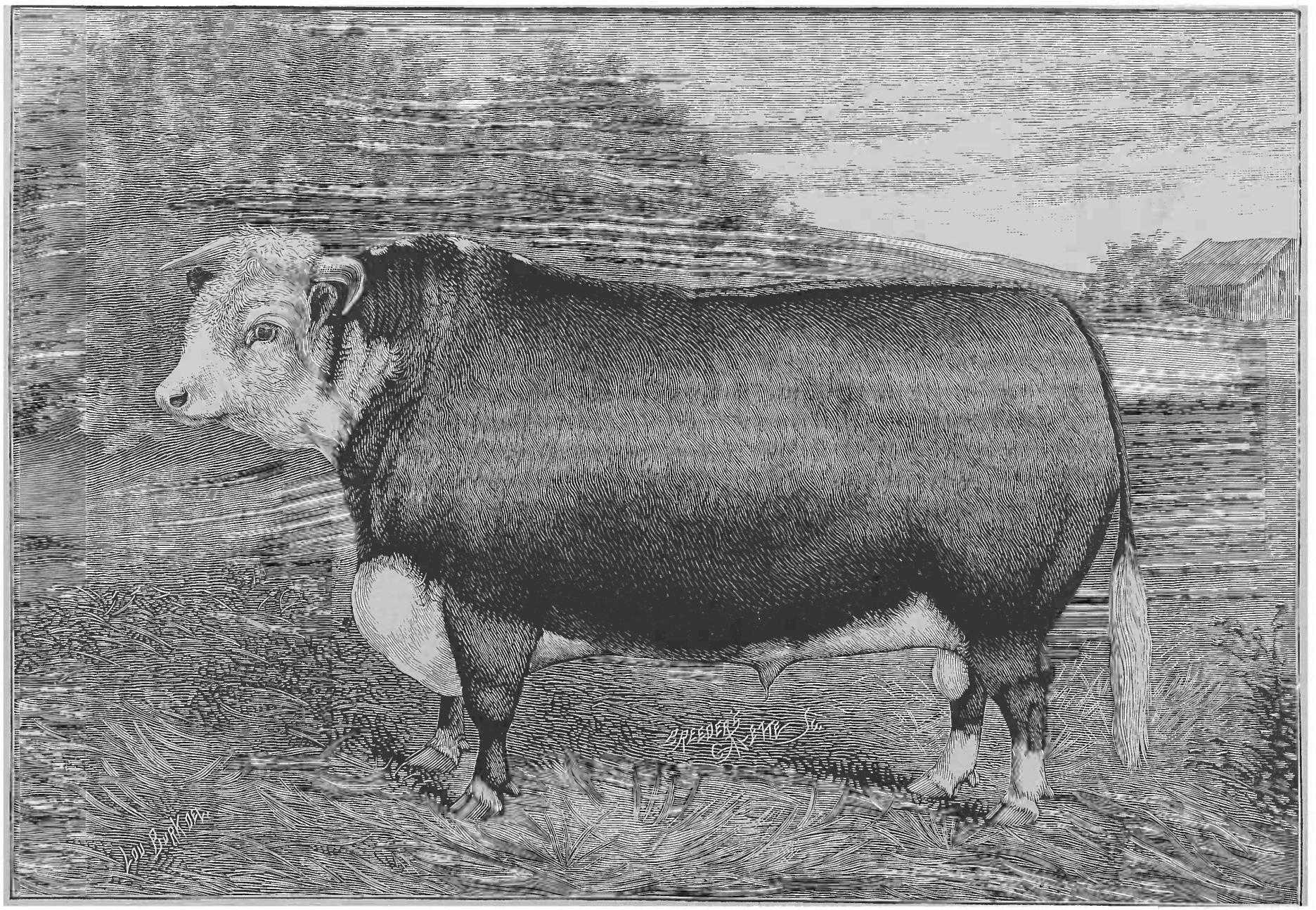
HEREFORD BULL ANXIETY 3D 4466.

Calved July 3, 1879; bred by Mr. T. J. Carwardine, Stocktonbury, Leominster, England; property of Thomas Clärk, Evergreen Stock Farm, Beecher, Ill.; got by Anxiety (5188), [one of the most famous sires of the breed ever imported to America], dam Tiny (the dam of Mr. Earl's Sir Bartle Frere, see page 264) by Longhorns (4711); 2d dam Rosebud by De Cote (3060); 3d dam Stately by Heart of Oak (2035), etc. Anxiety 3d sired several of the most successful prize-winning heifers at the Illinois State Fairs of 1885 and 1886. Sketched from life by Burk.



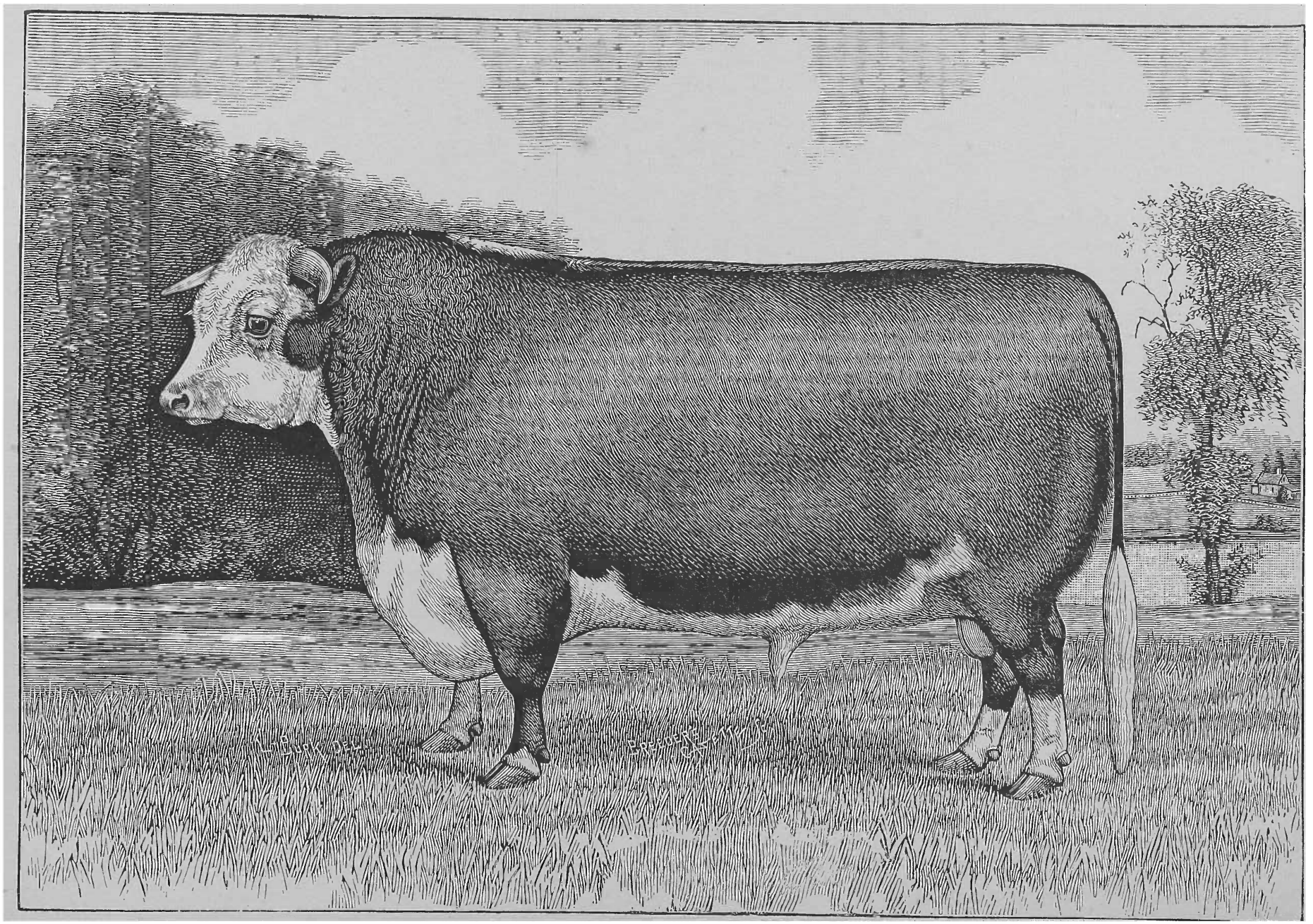
HEREFORD BULL HESIOD (6481).

Calved Aug. 7, 1880; bred by Mr. Philip Turner, of The Leen, Pembridge, Herefordshire, England; imported by Messrs. Yeld & Griffiths and sold (1886) to his present owner, Mr. John Borland, Elkhorn Farm, Stanton, Neb.; got by The Grove 3d (5051) [see page 258], dam Belle by Spartan (5009); 2d dam Exquisite by Provost (4067). Bears a striking resemblance to his illustrious sire, and is own brother in blood to the famous Rudolph (6660), Royal Grove, page 272, and Cassio, page 270. Sketched from life by Burk.



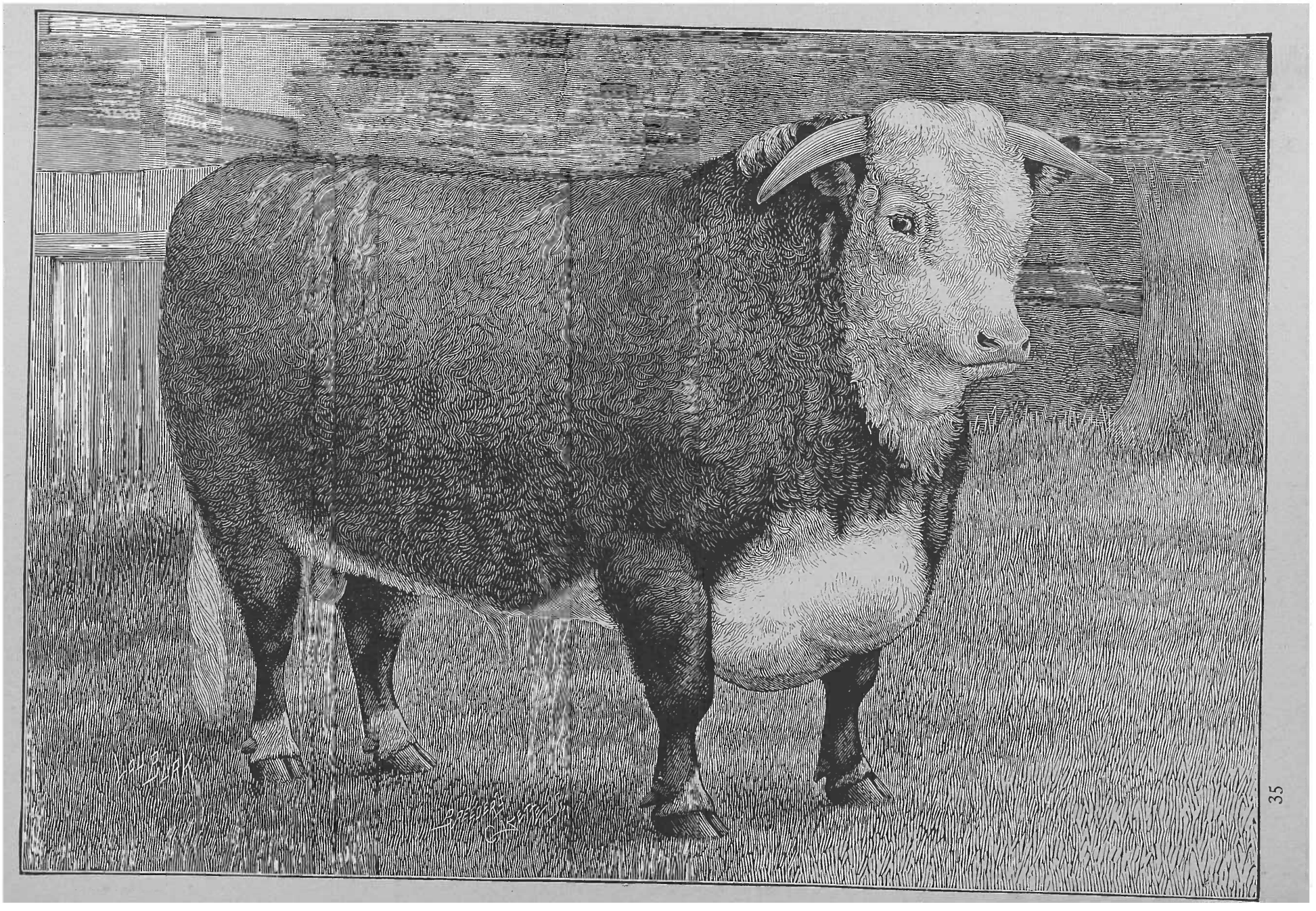
HEREFORD BULL CASSIO (6849).

Calved Aug. 8, 1881; bred by Mr. Philip Turner, of The Leen, Pembridge, Herefordshire, England; imported and owned by the Hon. M. H. Cochrane, Hillhurst, P. Q., Can.; got by The Grove 3d (5051) [see page 258], dam Duchess 2d by Spartan (5009); 2d dam Duchess by Provost (4067), etc. Own brother to Royal Grove, page 272, and chief stock bull at Hillhurst. Sketched from life by Burk.



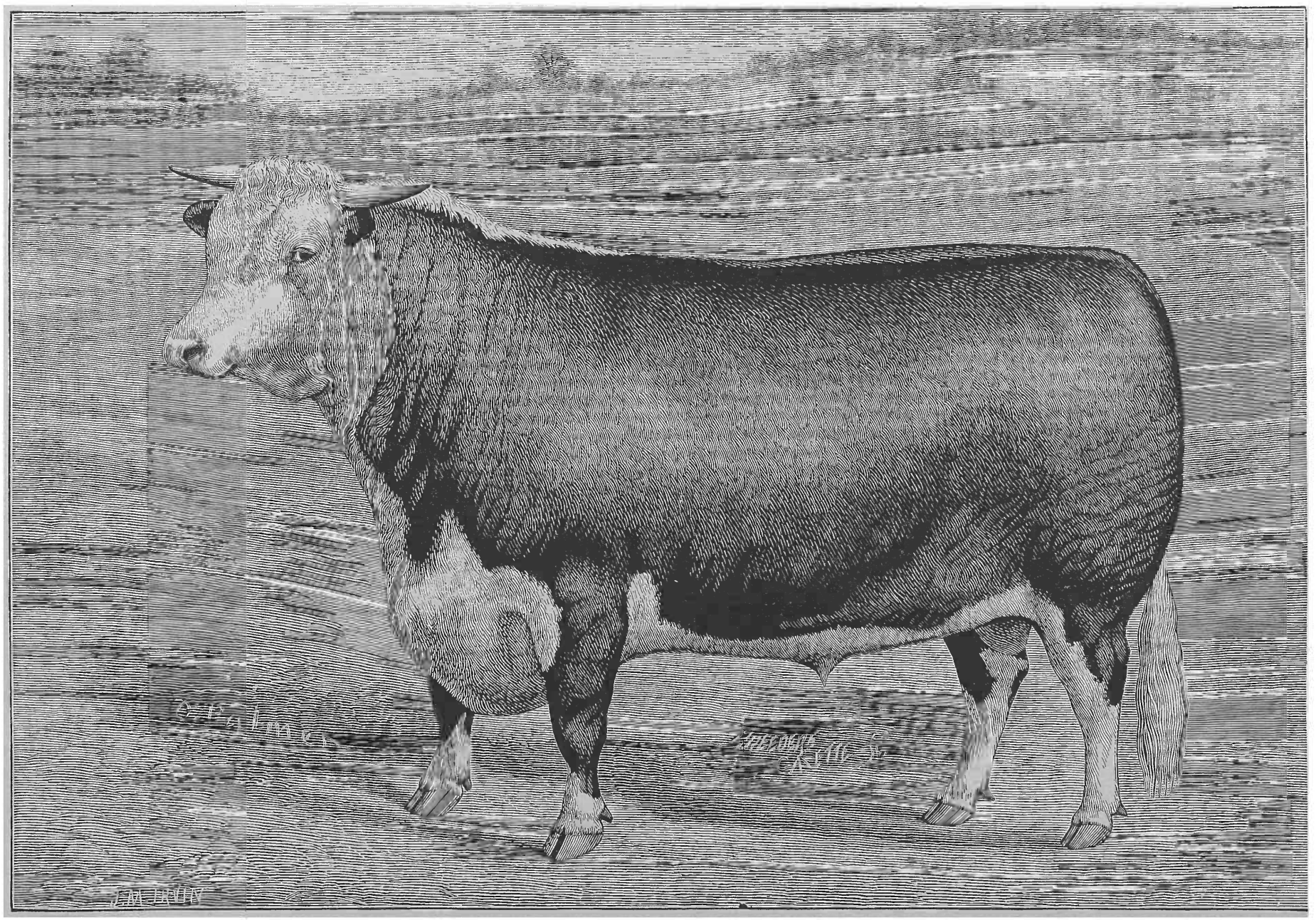
HEREFORD BULL ROYAL GROVE 21500.

Calved Sept. 30, 1883; bred by Mr. P. Turner, of The Leen, Pembridge, England; imported and owned by Mr. J. O. Curry, of Aurora, Ill.; got by The Grove 3d (5051), dam Duchess 2d (the dam of Cassio, see page 270) by Spartan (5009); 2d dam Duchess by Provost (4067). Royal Grove, it will be noticed, is an own brother to the Hon. M. H. Cochrane's chief stock bull, Cassio, and is full brother in blood to Mr. Borland's Hesiod, page 268. He was successfully shown at prominent fairs of 1886, and succeeds Archibald (see page 260) at head of Mr. Curry's herd. Sketched from life by Burk.



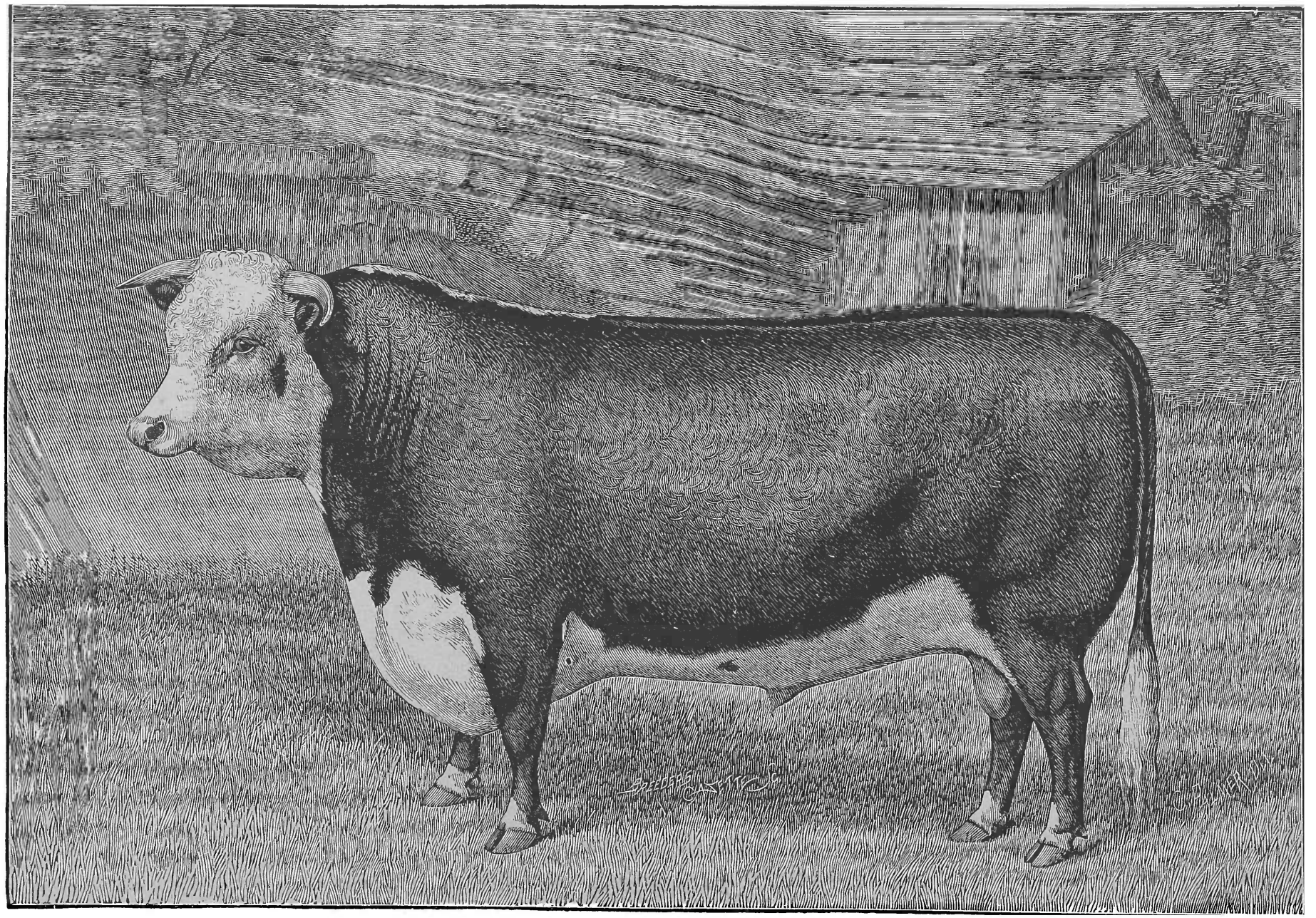
HEREFORD BULL BEAU REAL 11055.

Calved Sept. 22, 1883; bred by Messrs. Gudgell & Simpson, Independence, Mo.; property of Messrs. Shockey & Gibb, Early Dawn Stock Farm, Lawrence, Kan.; got by Anxiety 4th 9904 [he by the famous old Anxiety (5188), and sire also of the well-known Beau Monde 9903]; dam imp. Beau Ideal 8th 9949 by Aberdeen 5248, etc. Shown with success at leading fairs west of the Mississippi in 1886. Sketched from life by Palmer.



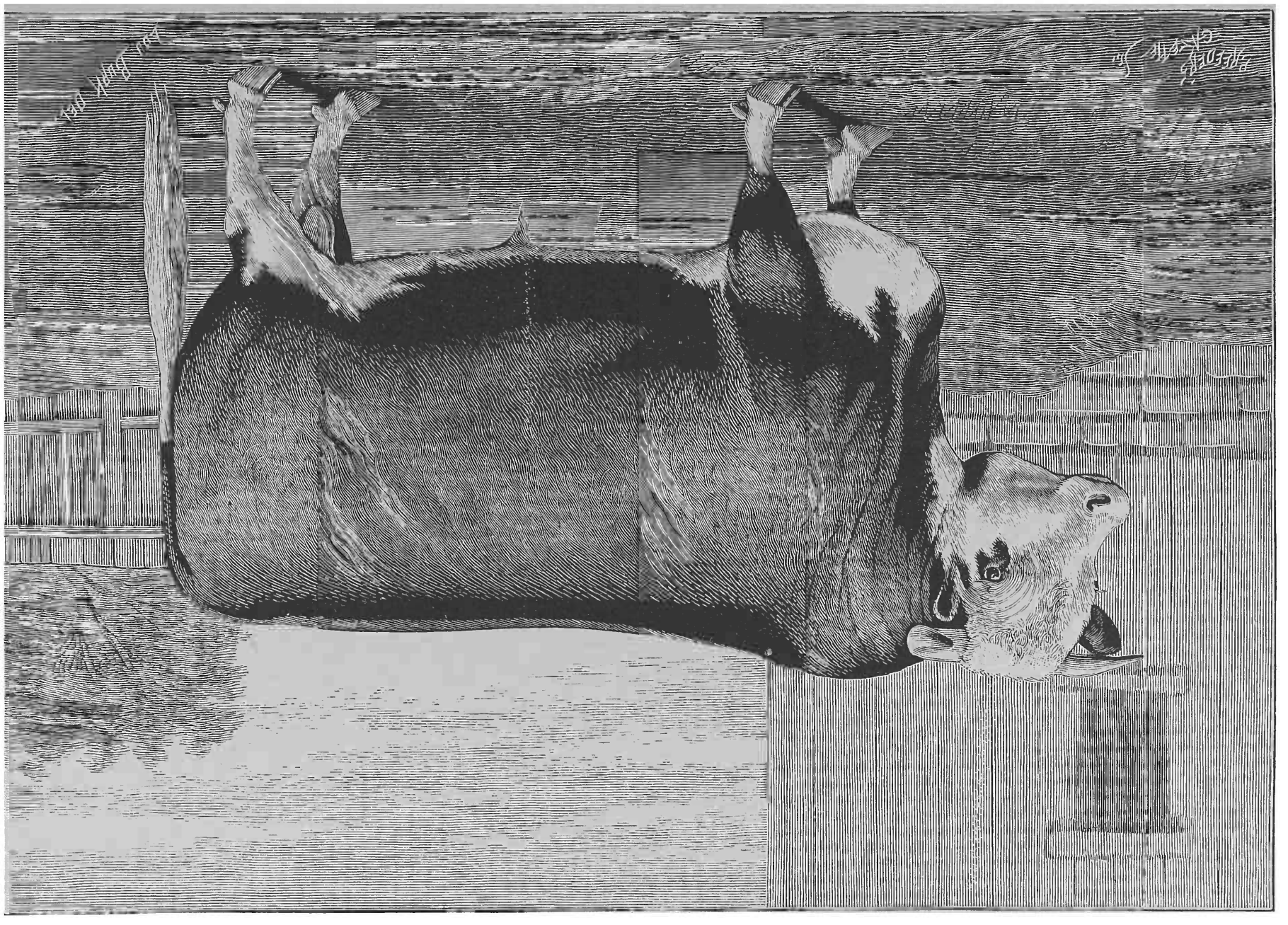
HEREFORD BULL PRINCE EDWARD 7001.

Calved Dec. 8, 1880; bred by Mr. T. J. Carwardine, Stocktonbury, Leominster, England; imported by Earl & Stuart, La Fayette, Ind., and sold by them to his present owner, Mr. G. W. Henry, Chicago, Ill.; got by the renowned Lord Wilton (4740), dam Lilac by De Cote (3060), etc. A winner at leading fairs in 1882. Sketched from life by Palmer.



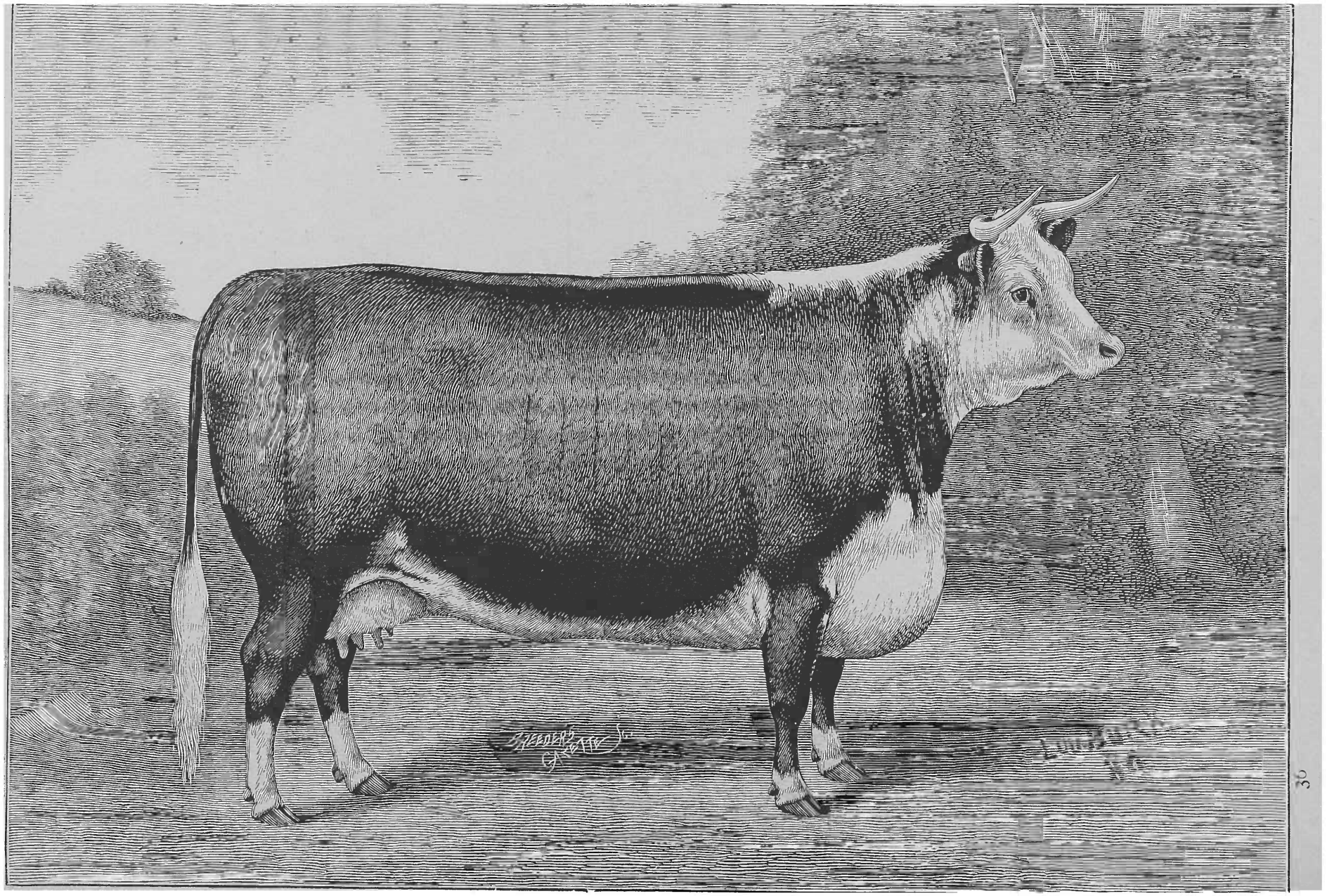
HEREFORD BULL LORD DE VERE 14904.

Calved May 6, 1882; bred by Mr. T. J. Carwardine, Stocktonbury, Leominster, England; imported and owned by Messrs. C. W. Cook & Son, Brookmont Farm, Odebolt, Ia.; got by Lord Wilton (4740), dam Cora 14905 by Rodney (4907); 2d dam Cobweb by De Cote (3060); 3d dam Spider by Heart of Oak (2035), etc. The chief stud bull in service at Brookmont. Sketched from life by Burk.



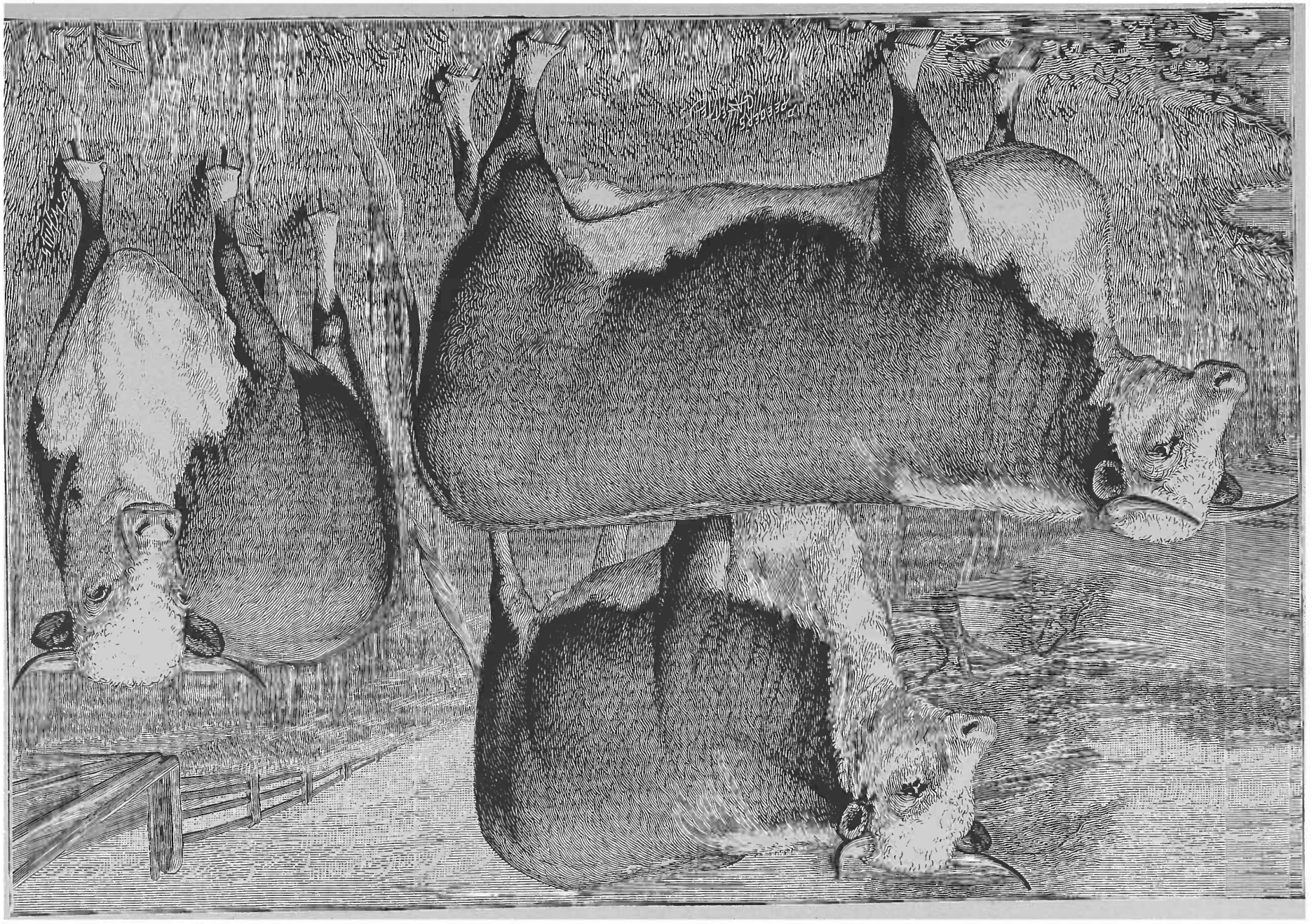
HEREFORD COW LOVELY 2d 21977.

Calved March 17, 1883; bred by Mr. R. W. Hall, Ashton, Leominster, England; imported February, 1885, by Mr. J. O. Curry, Aurora, Ill., and sold by him to her present (1886) owners, Messrs. Merrill & Fifield, Bay City, Mich.; got by Chancellor (5246), [he by the famous old Horace (3877), and first-prize winner at the Hereford meeting of the Bath and West of England Society in 1877]; dam Violet by Adrian (5713); 2d dam Lovely by Preceptor (4030), etc. She has been shown at a number of prominent Michigan fairs and has never been beaten. Weight, 1,545 lbs. Sketched from life by Burk.



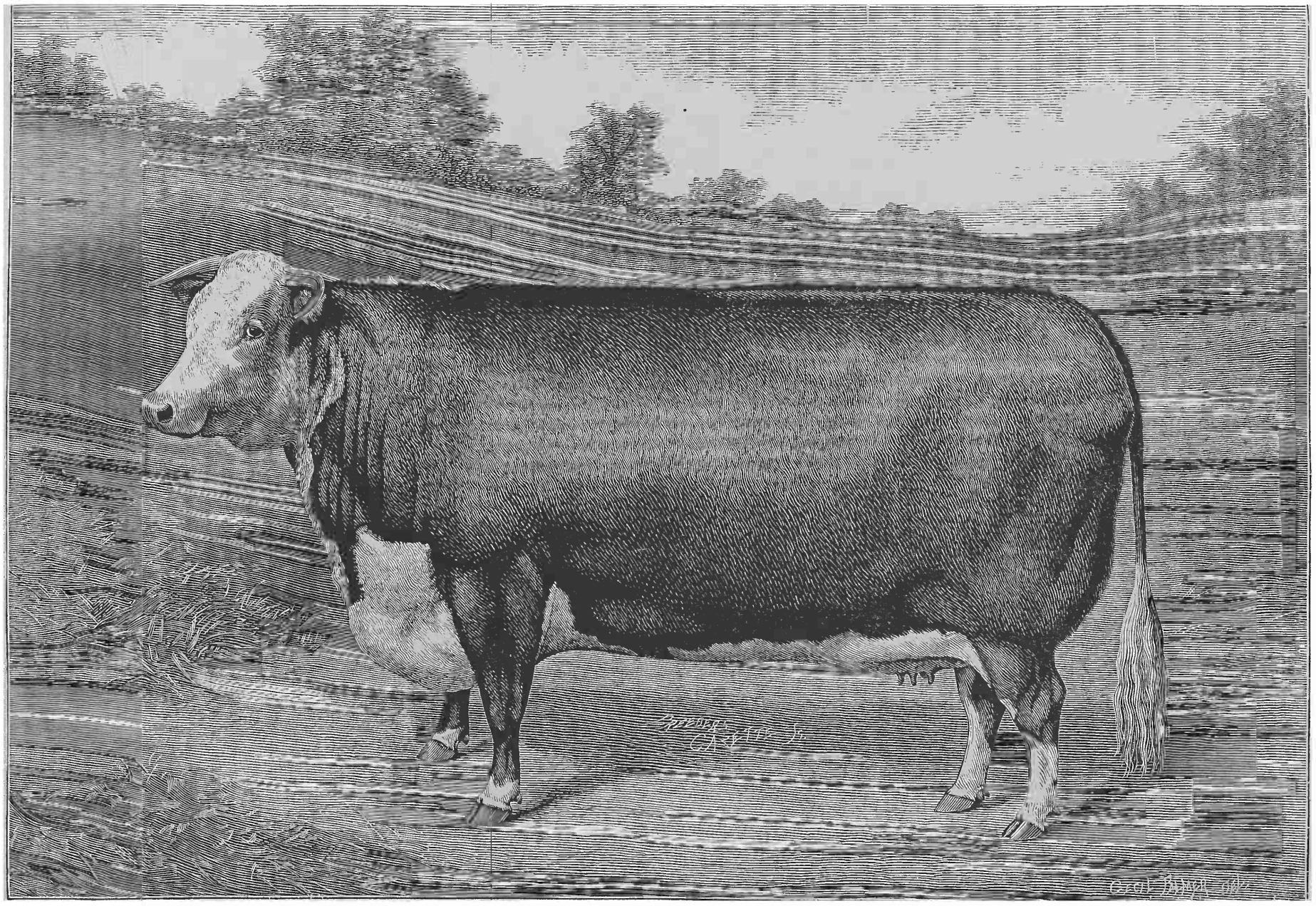
GROUP OF IMPORTED HEREFORD COWS.

Emerald 2d 9820, Lady Love 15249, and Henrietta 3d 15247; the former calved May 3, 1880, and bred by Mr. Philip Turner, of The Leen, Pembridge, Herefordshire, England; got by Chicago (5814), dam Emerald 8294 by Provost (4067); the two latter calved 1882, bred by Mr. T. J. Carwardine, Stocktonbury, Leominster, England; both got by Lord Wilton (4740), one (Lady Love) out of a Rodney cow and the other (Henrietta 3d) out of Rosetta by Sir Frank (2762); property of Clough Brothers, Elyria, O. Sketched from life by John W. Hills.



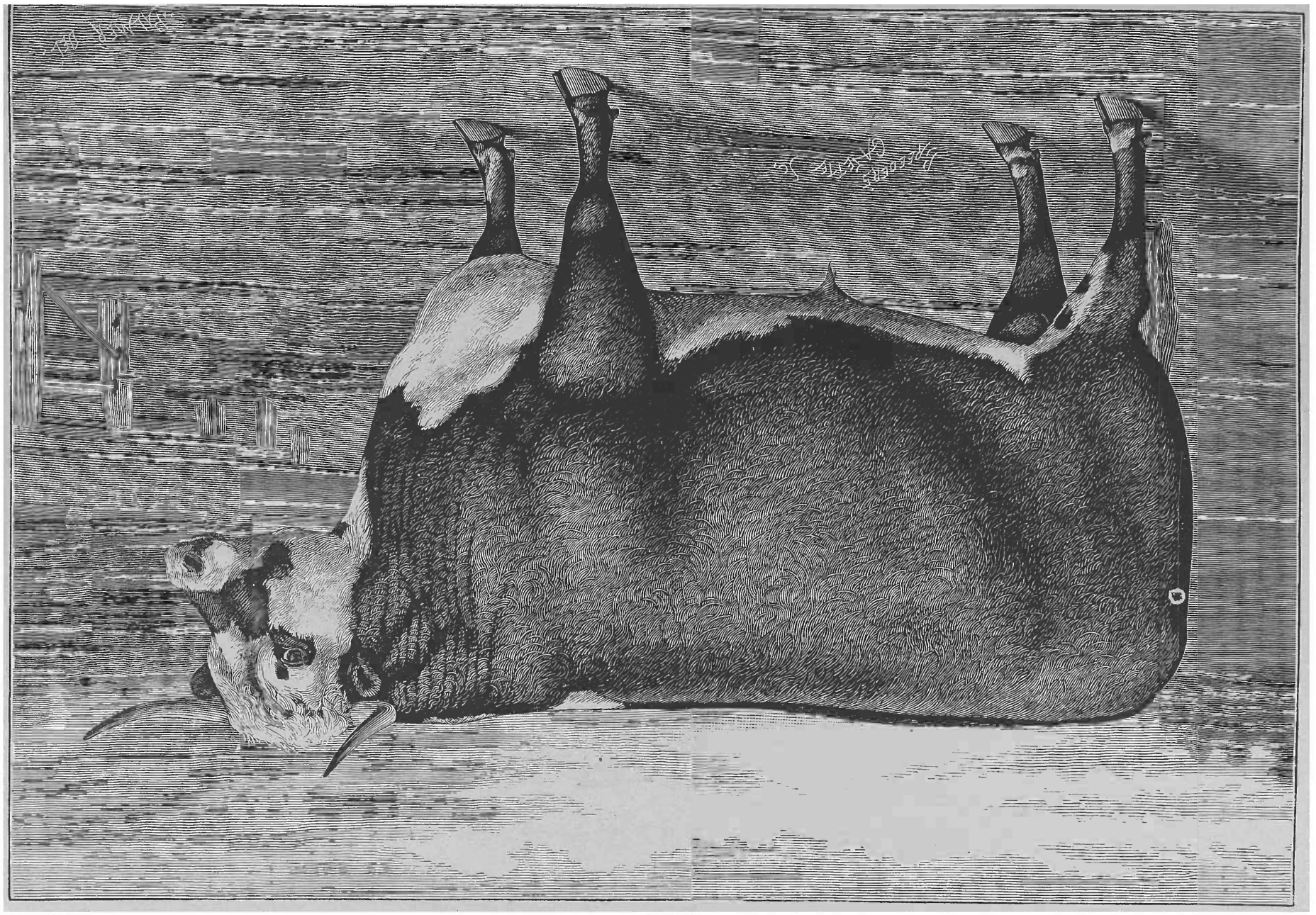
HEREFORD COW GRACE.

Calved June 20, 1881; exhibited at the American Fat-Stock Show of November, 1885, at a weight of 1,875 lbs., by Messrs. Swan Brothers, Indianola, Ia. One of the most remarkably fleshed cows ever seen at this show. Sketched from life by Palmer.



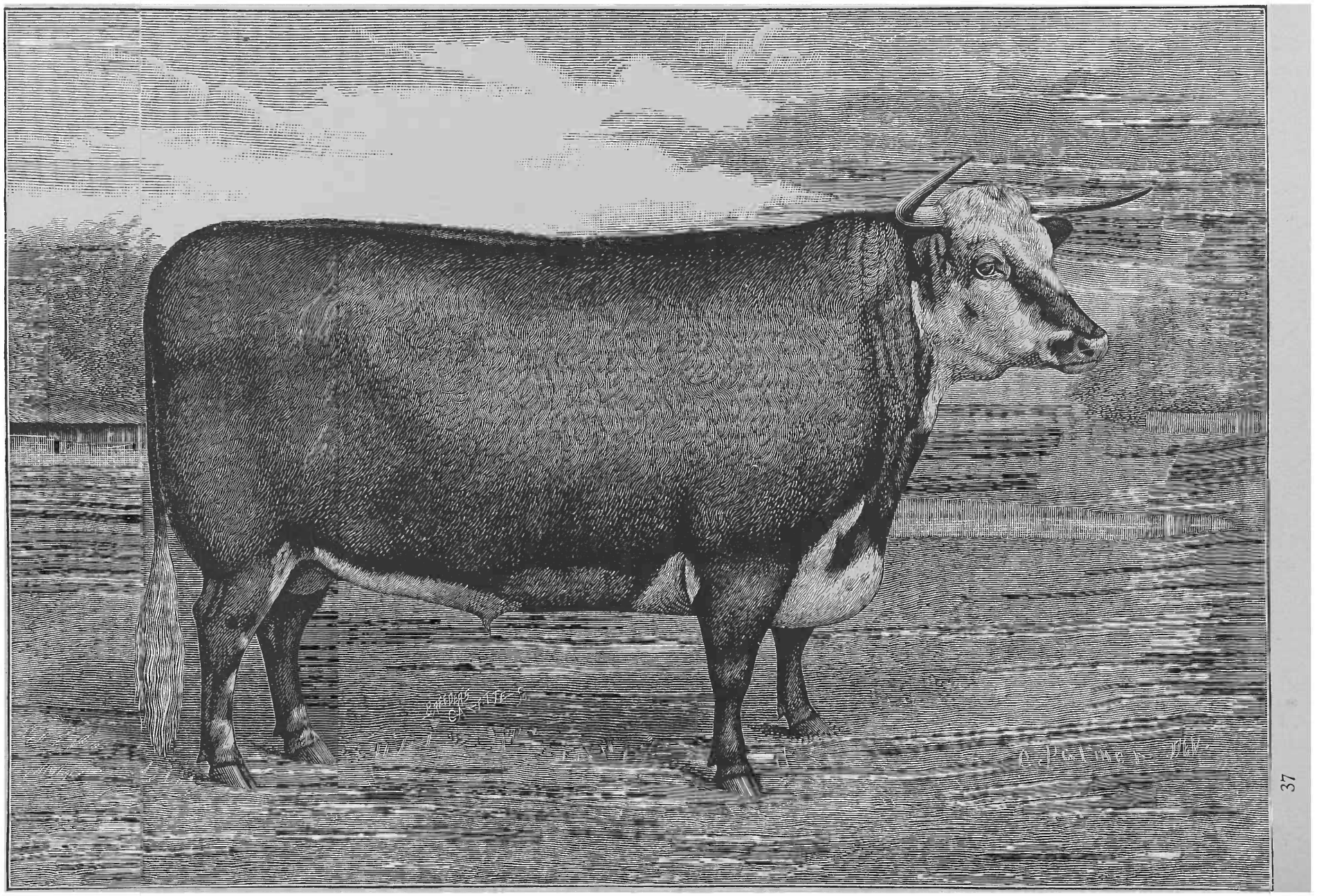
GRADE HEREFORD BULLOCK REGULUS.

Calved April 14, 1882; bred by Messrs. J. R. Price & Son, Williamsville, Ill.; fed and exhibited at the American Fat-Stock Show by Messrs. Fowler & Vannatta, Fowler, Benton Co., Ind., and champion over all breeds and crosses of any age at the exhibition of 1885; got by Regulus 2d 6089 (a bull bred by Mr. John Price, of Court House, Pembridge, England, and imported by Mr. C. M. Culbertson, Chicago, Ill.); he by the famous Regulus (4076), that beat his half-brother, the afterward celebrated Lord Wilton, when shown against each other as calves by their breeder, Mr. Tudge, at the Herefordshire County Show. This bullock, like Roan Boy, Mr. Culbertson's champion of the show of 1883, was out of a half-blood Short-horn cow, and weighed 2,345 lbs. upon entering the show of 1885. He was a steer of fine length, with great breadth and thickness of "top" from chine to rump, showing well-proportioned quarters and extra loin. Sketched from life by Palmer.



GRADE HEREFORD BULLOCK DYSART.

Calved July 15, 1882; bred, fed and exhibited at the American Fat-Stock Show by C. M. Culbertson, Chicago, Ill. (farm Newman, Douglas Co., Ill.); winner of the *Breeder's Gazette* Gold Challenge Shield for best beast in the show *bred and fed by the exhibitor*, at the show of 1885, and a prominent candidate in the judging at same show for other high honors. He was shown at a weight of 1,890 lbs., and was specially distinguished for neatness and fine quality of flesh, being regarded by butchers as an extra "killing" steer. Sketched from life by Palmer.



CHAPTER XI.

ABERDEEN-ANGUS CATTLE.

According to the best authorities the polled or hornless breeds of cattle now known as Aberdeen-Angus and Galloways are descended from the native cattle of the Island of Great Britain. The original home of the Aberdeen-Angus, of which it is proposed to treat in this chapter, is in the county of Aberdeen and in the district of Angus in the Northeastern part of Scotland; and from these places the breed takes its now generally accepted name. The existence of a race of hornless cattle for more than a hundred years back in the region above mentioned is clearly established, but with this as with all other breeds of our domesticated animals, except the Thoroughbred horse, everything back of the first half of the eighteenth century is vague and uncertain. Youatt, in "Cattle, their Breeds and Management," published in 1835, says: "There have always been some polled cattle in Angus; the country people calling them hornless or dodded cattle. Their origin is so remote that no account of their introduction into this country can be obtained from the oldest farmers or breeders." But while the early existence of this breed is clearly established, and its evolution from the native race of Scotland generally admitted, yet there is no trace as to when the hornless quality first became a recognized characteristic,

and certainly the original specimens of the genus *Bos* that inhabited the island were horned.

The efforts for improvement in this breed do not appear to have commenced until many years after the more enlightened and progressive farmers of the valley of the Tees and of Herefordshire had brought their favorite breeds into prominence; and it seems to be a well-established fact that it was not until 1848 that the Highland Agricultural Society, the leading organization of the kind in Scotland, recognized any distinction between the polled cattle of Galloway and those of the Northeastern counties. It is also doubtless true that in the early part of the present century the popularity of Short-horn cattle had become so great, and the breed so generally disseminated throughout Scotland, that all other breeds in that region were neglected and well-nigh displaced.

It was at this period in the history of the breed that its first great improver, Mr. Hugh Watson, came upon the stage. He was born in 1789 and became the tenant of the Keillor farm in 1808, commencing with six cows and a bull, which he received from his father as the nucleus of a herd. In the "History of Polled Aberdeen or Angus Cattle," by Macdonald and Sinclair, it is said of Mr. Watson that "In his wide circle of intimate friends he included the late Mr. John Booth, Mr. Wetherell, Mr. Anthony Maynard, Mr. William Torr, and other noted breeders of Short-horns; and there is good reason to believe that in many points connected with the building up of his herd of improved polled cattle he was guided to some extent by the experience of these great patrons of the rival breed. Mr. H. H. Dixon, in 'Field and Fern,' says 'Mr. Watson was purely catholic in his taste. Bracelet, Charity, and one or two

more of the pure Booths were the models he kept in his eye in building up his blacks; and even in a shire so strongly wedded to its own breed he did not shrink from saying so.' His motto would seem to have been 'Put the best to the best, regardless of affinity or blood.' He bred from none but the choicest specimens at his command and did not hesitate to follow the examples of the Collings, the Booths, Thos. Bates and other celebrated Short-horn breeders in mating animals closely related to each other. It is evident that they practiced in-and-in breeding to a considerable extent. It is also clear that he aimed at building up particular lines or families, and that to some extent he bred each of these families within itself. He did not pursue persistently that intricate system of in-and-in breeding adopted by most of the noted early improvers of Short-horns; but in this point he so far followed their example. Perhaps the truest description that could be given of his method of breeding is that he bred from none but the best — those that came nearest to his ideal — and that he did not care whether these were closely related or not."

One of the most remarkable cows of any breed ever produced was the famous Prima cow, afterward known as "Old Grannie," bred by Mr. Hugh Watson. She lived to the wonderful age of thirty-five years and six months, and produced calves up to her twenty-ninth year, being, as is stated in the Polled Herd Book, the dam of twenty-five calves in all; but Mr. William Watson, son of Hugh Watson, says that to his certain knowledge she produced twenty-nine calves — five males and twenty-four females — the last one when she was in her thirty-second year. [*Breeder's Gazette*, Aug. 3, 1882.] From this wonderful cow are descended the Jilts

Ruths, Favorites, Princesses, and other popular families of the breed. And that her wonderful constitution and strong vitality was perpetuated to a marked degree in her progeny is attested by the fact that Princess of Kinnochtry, one of her descendants, was exhibited at the Highland Society's Show in 1881, although she was then in her twenty-first year and was the dam of seventeen calves, and is mentioned as being, even at that great age, "deep in flesh and perfect in outline."—(*Breeder's Gazette*, Vol. II, page 170.)

Another man whose name will always be held in the highest esteem by Aberdeen-Angus breeders was William McCombie, of Tillyfour, whose career as a breeder began in 1829. In the history above quoted from, after recounting the great rage for Short-horn blood which had taken possession of Scotch breeders, and the mania for crossing which had well-nigh rendered the polled breed extinct in that region, Mr. McCombie is mentioned as "the great deliverer of the polled race," and the authors go on to say: "He was among the first to discover its threatened extinction; and knowing full well its value for the country he resolved to do what in him lay to protect it from the danger to which it had become exposed. It is doubtful, we think, whether any other single individual has ever done more to improve and popularize any breed of live stock than the late Mr. McCombie did to improve and make known his pet race of cattle. Taking up the good work so systematically commenced by Mr. Hugh Watson he carried it on with a skill and success that have few equals, and that will hand down his name to posterity as that of the chief improver of the polled Aberdeen or Angus breed. It has been said that what the Collings did for Short-horns Mr. Hugh Watson did for the polled breed. It might

be said with equal truth that what the Booths have been to the 'red, white, and roan' Mr. McCombie was to the 'glossy blacks.' Than that higher credit could be paid to no breeder of live stock. * * * Mr. McCombie's success in the show yard has few parallels in the history of farm stock. In the third edition of his volume entitled 'Cattle and Cattle-Breeders' no fewer than seventeen pages are occupied by a mere record of the premiums won by animals belonging to the herd prior to 1875. Not content with a large share of Scotch and English honors, he several times entered international contests in France, and on all occasions returned with new laurels and fresh fame for his favorite blacks. Probably the crowning victory of his life was achieved at the great International Exhibition held in Paris in 1878. On that occasion, in addition to several class honors, he carried off with a group of beautiful young polled cattle, all bred at Tillyfour, not only the £100 prize for the 'best group of cattle bred by the exhibitor' in the division foreign to France, but also the £100 prize for the 'best group of beef-producing animals bred by the exhibitor.' In fat-stock as well as breeding shows Mr. McCombie has often proved invincible; and altogether it may safely enough be said that the high reputation which the breed has deservedly gained beyond the bounds of the British Empire has to a large extent been fostered by the remarkable show-yard achievements of the Tillyfour Herd."—("History of Polled Aberdeen or Angus Cattle," pages 62–64.)

Space cannot be spared in this volume to mention in detail other meritorious breeders who were prominent in the work of effecting improvement in this breed. A herd book for the polled cattle of Scotland first appeared in 1862, but the movement languished, and it

was not until ten years afterward that the second volume appeared. Since then the publication has been carried on with regularity, and a total of nine volumes have been issued. In the first four volumes both Aberdeen-Angus and Galloway cattle were registered, but after the fourth volume was issued the Galloway Society commenced the publication of a herd book of its own, and since that time Galloways have not been admitted to the Aberdeen-Angus record.

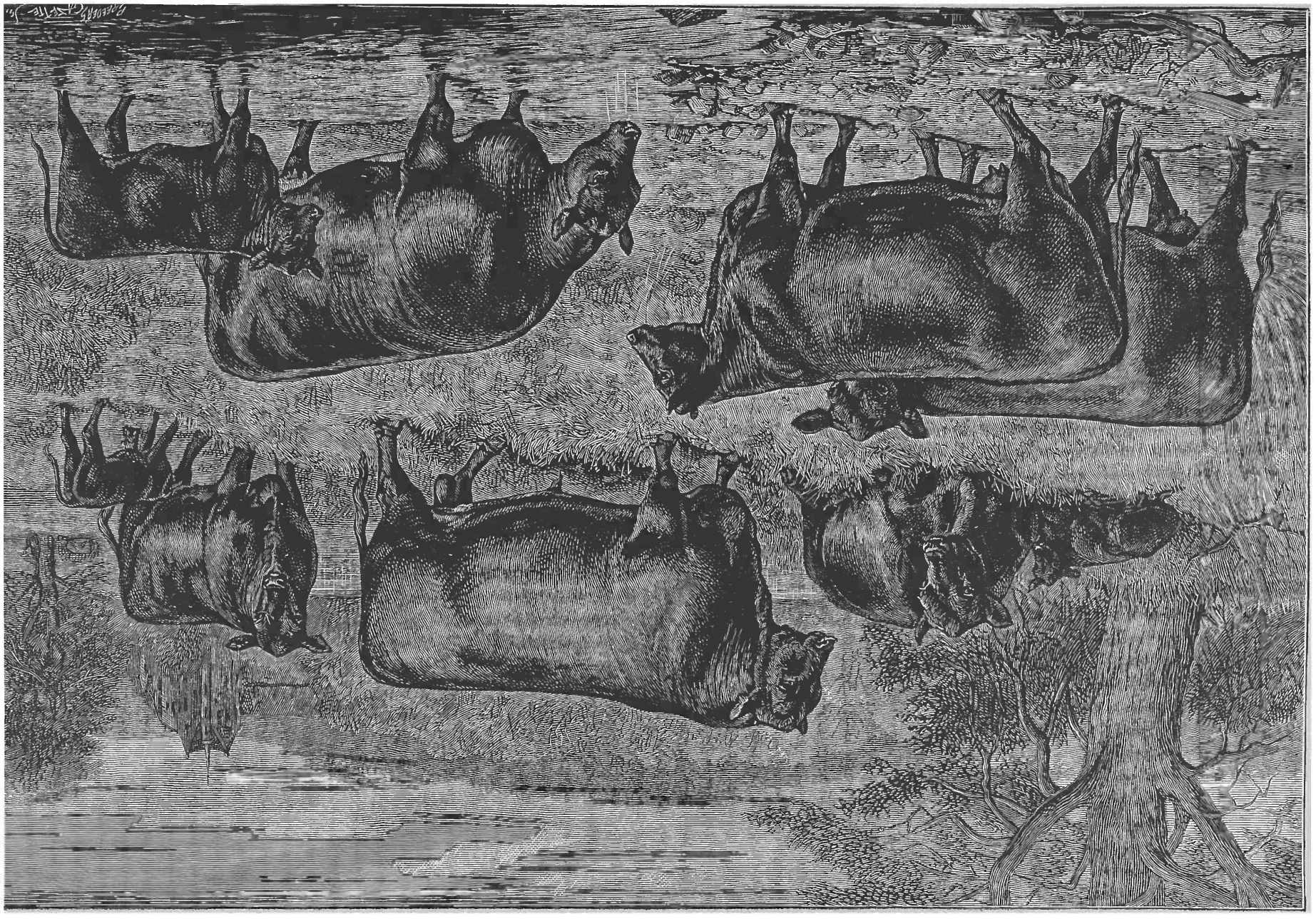
Within the past ten years this breed has made rapid advances in popular favor in the United States, both in the Mississippi Valley and in the grazing regions of the far West, where they appear to have given good satisfaction, but prior to about 1875 they were scarcely known in this country. A herd book has been established under the auspices of the American Aberdeen-Angus Association and two volumes of the work have been issued. Mr. Charles Gudgell, of Independence, Mo., is Secretary of the Association and has charge of its herd book.

In color the Aberdeen-Angus cattle are almost invariably black, although white markings on the belly and especially on the udder are not regarded as evidences of impure breeding. There is also an occasional instance of reversion to dark red and brindle, colors which in the early history of the breed were by no means uncommon, and the Hon. M. H. Cochrane, of Hillhurst, P. Q., Can., has several pure-bred specimens of the breed that are wholly red in color. The hornless feature is always insisted on as a mark of purity of blood, but even here "scurs," or loosely attached rudimentary horns, are sometimes found upon the males of the breed. Their partisans do not claim for the Aberdeen-Angus any superior excellence as dairy cattle, the specialty for which they have long been

bred being the economical production of the highest quality of beef; but notable instances of great excellence at the pail are on record, as for example the fine dairy qualities of some of the late Lord Airlie's stock at Cortachy Castle. The "History of Polled Aberdeen or Angus Cattle," by Macdonald and Sinclair; McCombie's "Cattle and Cattle-Breeders," and a recently published work entitled "The Breed that Beats the Record," may profitably be consulted by those in search of further information concerning this breed.

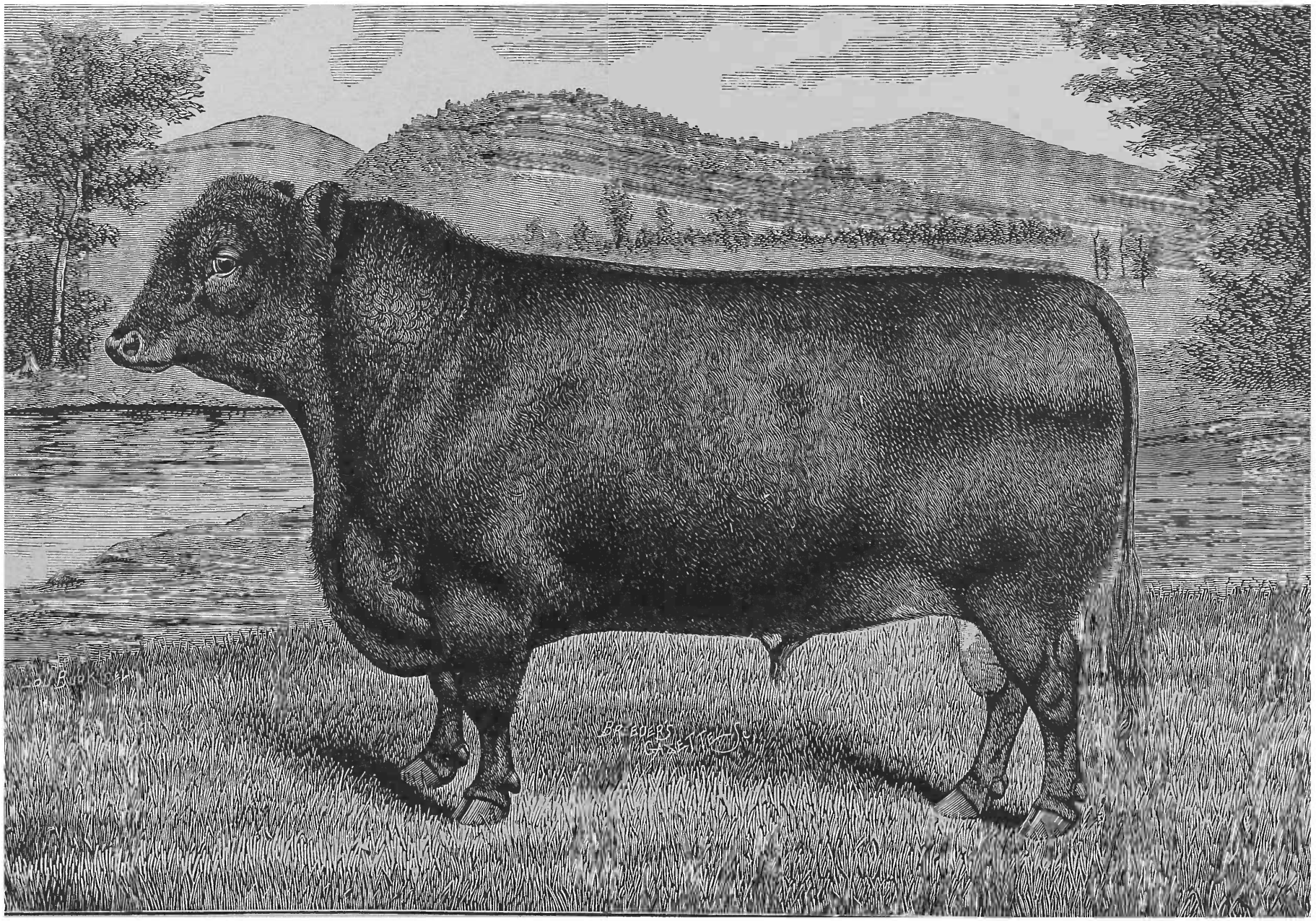
GROUP OF ABERDEEN-ANGUS CATTLE.

The engraving on the opposite page represents a group of Aberdeen-Angus cattle of the very popular Erica tribe, descended from the celebrated cow of that name bred by Lord Southesk and purchased by Sir George Macpherson Grant, of Castle Ballindalloch, when she was four years old. The family descended from this cow has long been regarded as one of the very best of the breed, and its reputation has added greatly to the renown of the Ballindalloch Herd, which is probably the oldest one of this breed now in existence in the world. In the center of the group is shown Young Viscount (736), for years the premier stock bull at Ballindalloch; and the cows—naming them in order, beginning with the calf lying down at upper left-hand corner of the engraving—are as follows: Eila (3794), Edelweis (5605), Eugenia (4170), Electra (4186), Equity (4671), and Equinox (8616). Engraved from a photograph copy of a painting by Steel made in 1884.



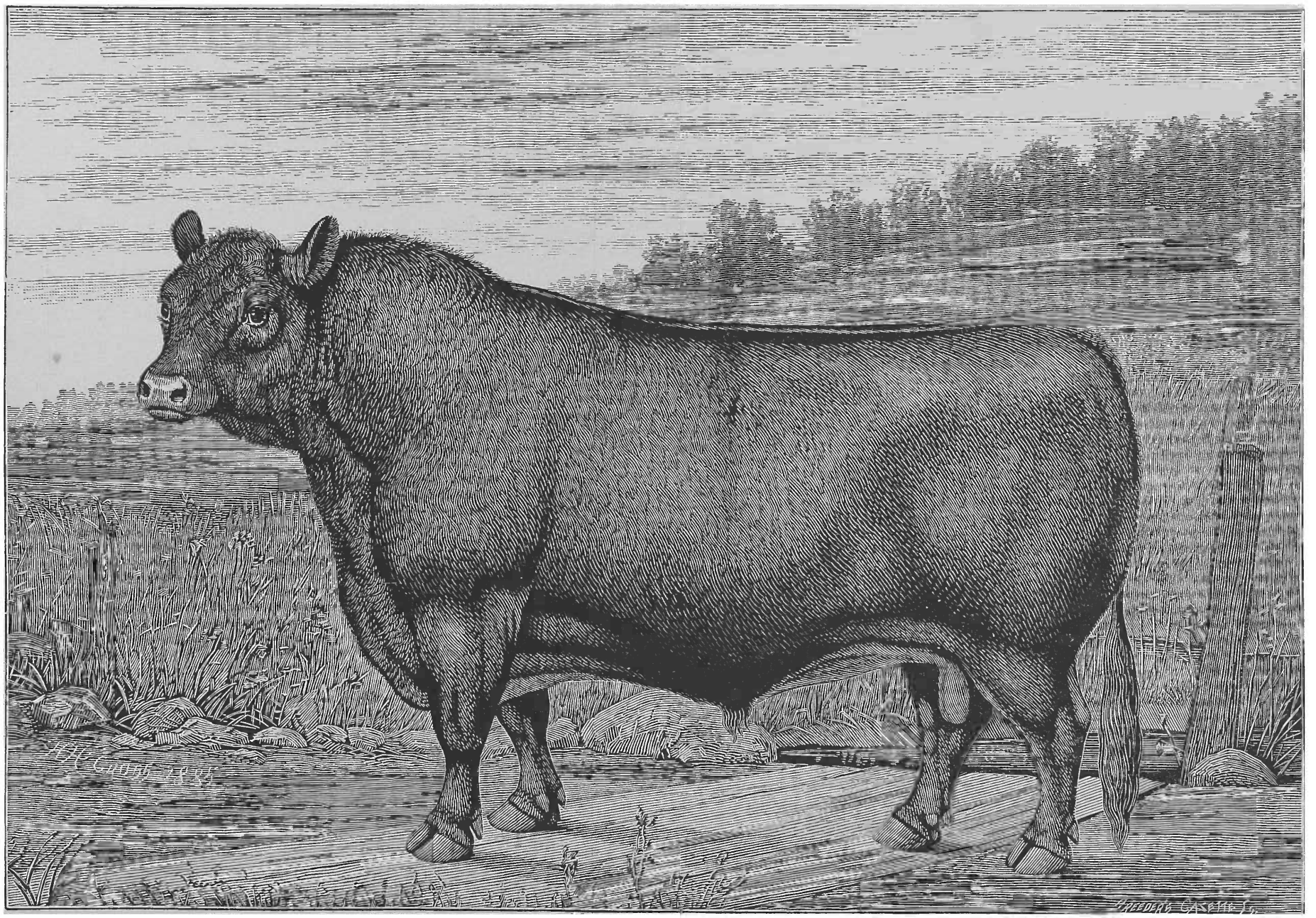
ABERDEEN-ANGUS BULL JUDGE (1150).

Calved Feb. 7, 1875; bred by Sir George Macpherson Grant, The Castle, Ballindalloch, Scotland; imported to Canada by Mr. Geo. Whitfield, Rougemont, P. Q., from whom he was purchased by J. S. & W. R. Goodwin, Beloit, Kan., and died their property in 1884; got by Scotsman (474) [bred by Mr. McCombie at Tillyfour, and the first-prize bull at the Highland Society's Show at Kelso in 1872], dam the celebrated Jilt (973) [also bred by Mr. McCombie, a prize-winner as a heifer at the Royal English and Highland Societies' Shows and the dam of that famous trio of Ballindalloch bulls Judge (1150), Juryman (404), and Justice (1462)] by Black Prince of Tillyfour (366) [a famous Queen Mother bull bred at Tillyfour]; 2d dam Beauty of Tillyfour 2d (1180) [dam also of Ruth of Tillyfour (1169)] by Young Jock (4), etc. Judge was the second-prize yearling at the Highland Show of 1876 at Aberdeen, and gained the gold medal at the Paris International Exposition in 1878. Sketched from life by Burk.



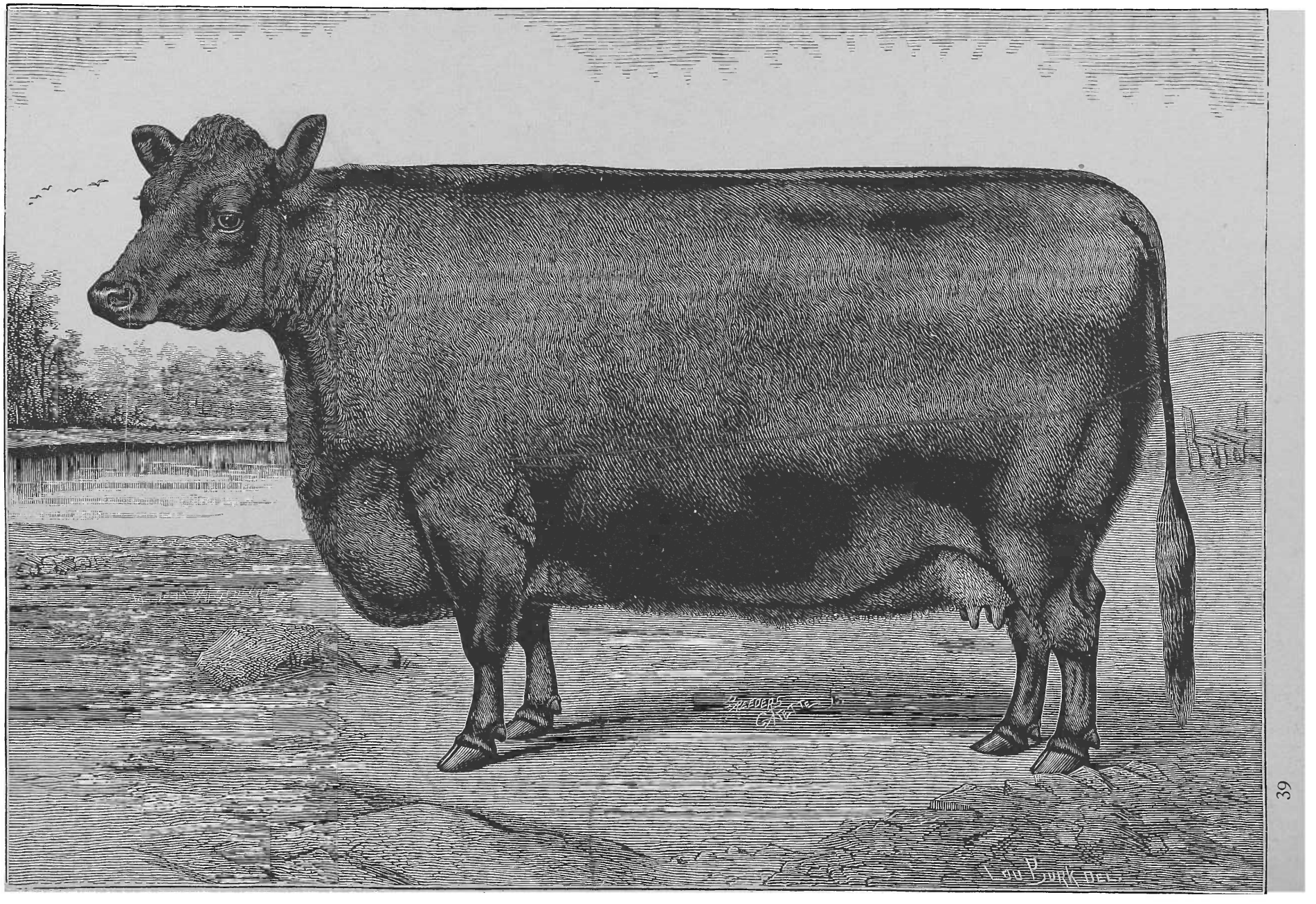
ABERDEEN-ANGUS BULL GUIDO (2135).

Calved Jan 24, 1881; bred by James Fowlie, Bruce Hill, New Deer, Scotland; property of T. W. Harvey, Turlington, Otoe Co., Neb.; got by Young Captain (1712), dam Beauty of Bruce Hill (3684) by Major of Bognie (444) [bred by Col. Fraser, of Castle Fraser, and got by Jamie of Easter Skene (367), out of Lily of Castle Fraser (1114) by Black Jock of Tillyfour (365); winner of first prize at United Banffshire Society's Show at Cornhill in 1875]; 2d dam Beauty of Kinnochtry (1884) by Crathie 2d (342); 3d dam Blue Belle of Kinnochtry (918) by Young Hugh (131), etc. Guido has been shown at leading State Fairs in the West with success. Engraved from a painting by Cross.



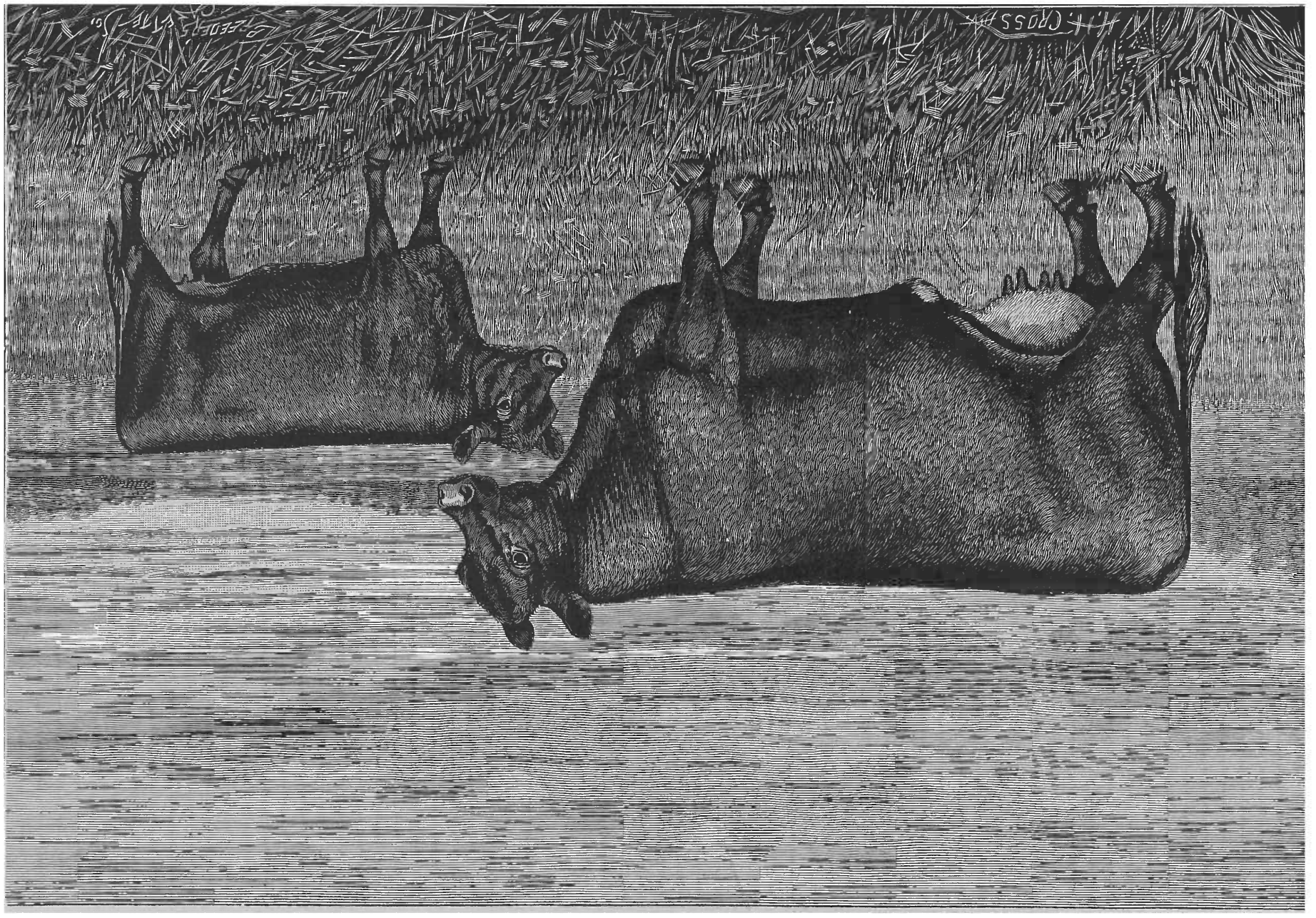
ABERDEEN-ANGUS COW COQUETTE 4TH (3497).

Calved March 7, 1877, bred by Robert Walker, Montbletton, Banffshire, Scotland; imported and owned by Messrs. Anderson & Findlay, Lake Forest, Ill.; got by Rory O'More (844) [a Montbletton Lady Ida or Mayflower bull that gained several prizes at the Highland, Turriff and United Banffshire Shows], dam Coquette 3d (1402) by Kildonan (405), etc. Coquette 4th has been a prize-winner since two years old, having gained high honors at the Royal Northern, Turriff, Banffshire, and other Scottish shows, and her daughter Coquette 11th was awarded the silver cup at the great Smithfield (London) Fat-Stock Show in 1885, as a yearling, in a class of eighty-six for best cow or heifer, open to all classes. She has also been a successful show cow at Illinois, Iowa, and Wisconsin State Fairs since her importation. The family from which she descends is of Ballindalloch origin. Sketched from life by Burk.



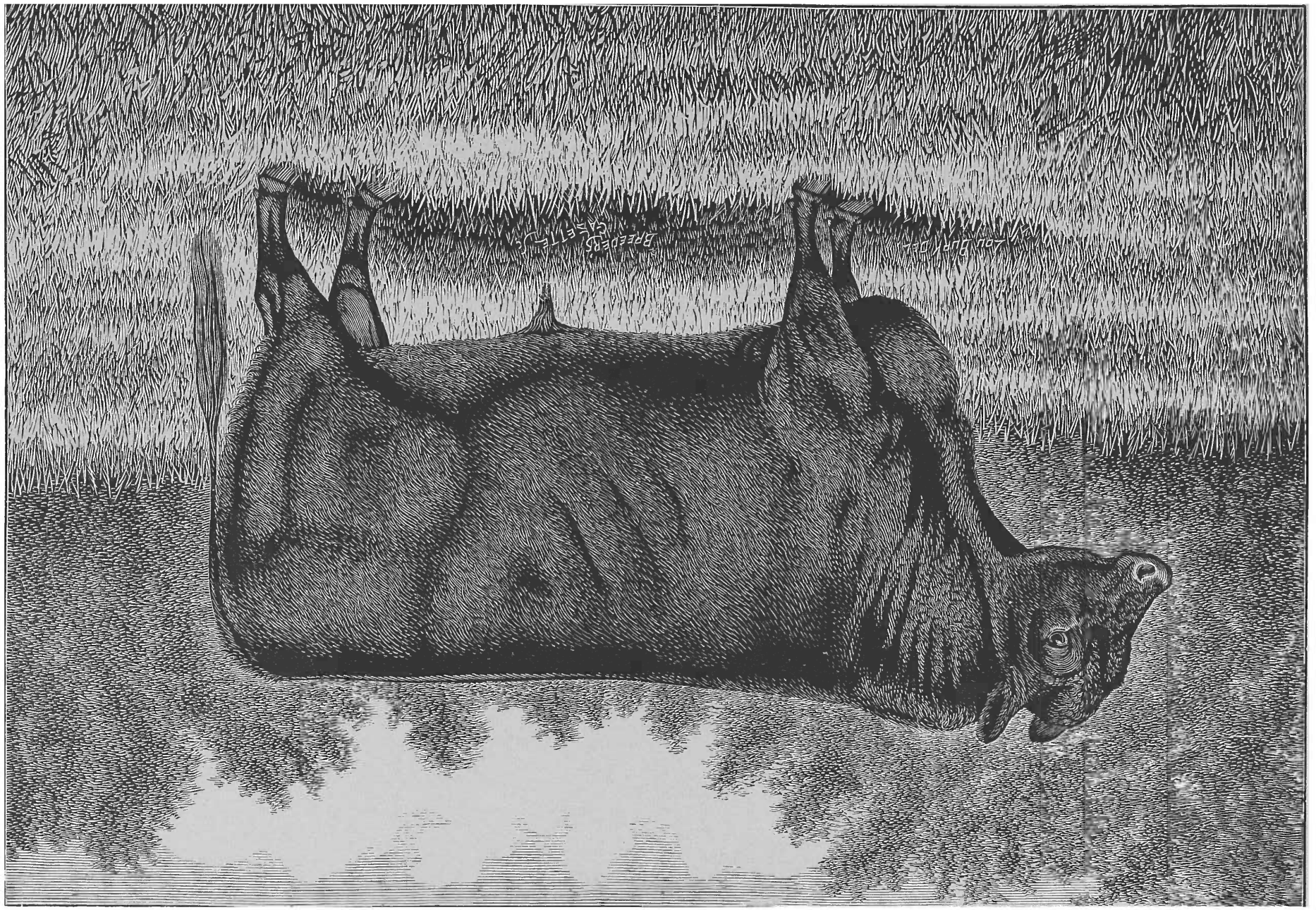
ABERDEEN-ANGUS COW BEAUTY OF HILLHURST (7140) AND CALF.

Calved Dec. 10, 1881; bred by the Earl of Strathmore, Glamis Castle, Scotland; imported by Hon. M. H. Cochrane, Hillhurst, P. Q., Can.; property of Mr. T. W. Harvey, Turlington, Otoe Co., Neb.; got by Bismarck 2d (1860) [bred at Tillyfour and sold to the Earl of Strathmore], dam Beauty 2d of Glamis (4800) by Elcho (595) [Sir George Macpherson Grant's famous son of Juryman and Erica]; 2d dam Beauty of Glamis (3515) by Elchies (563), etc. The calf shown in the picture, Beauty of Turlington 2d, was sired by one of the Turlington show bulls, Marquis of Huntley, of the popular Sybil tribe. Beauty of Hillhurst has had a very successful show-yard career at St. Louis, Chicago, Des Moines, Lincoln, and other leading fairs, and her calf has also been a winner. Engraved after a painting by Cross.



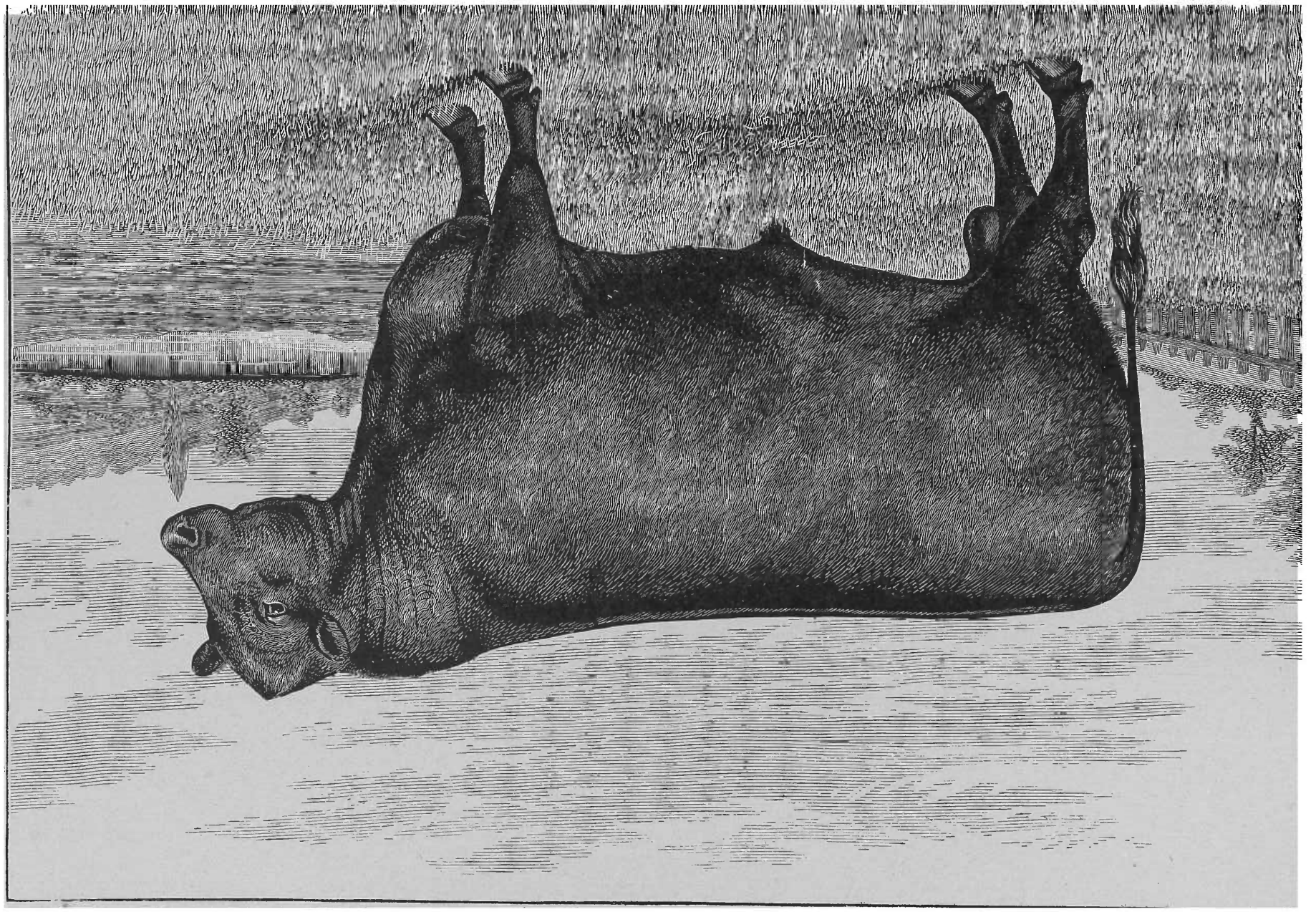
ABERDEEN-ANGUS BULL PARIS 3D (2276).

Calved March 4, 1880; bred by Mr. Wm. McCombie, of Easter Skene; imported and owned by Hon. M. H. Cochrane, Hillhurst, P. Q., Can.; got by Paris (1473) [Mr. McCombie's first-prize young bull at the Paris Universal Exposition of 1878], dam the prize cow Prosperine (3807) by Bachelor (690); 2d dam Black Bess of Easter Skene (1811) by Baronet of Drumin (637), etc. Paris 3d was the first-prize yearling at the Royal Northern and Highland Shows, and was purchased by Mr. Cochrane as stock bull to head the Hillhurst Herd. (See page 316.) Sketched from life by Burk.



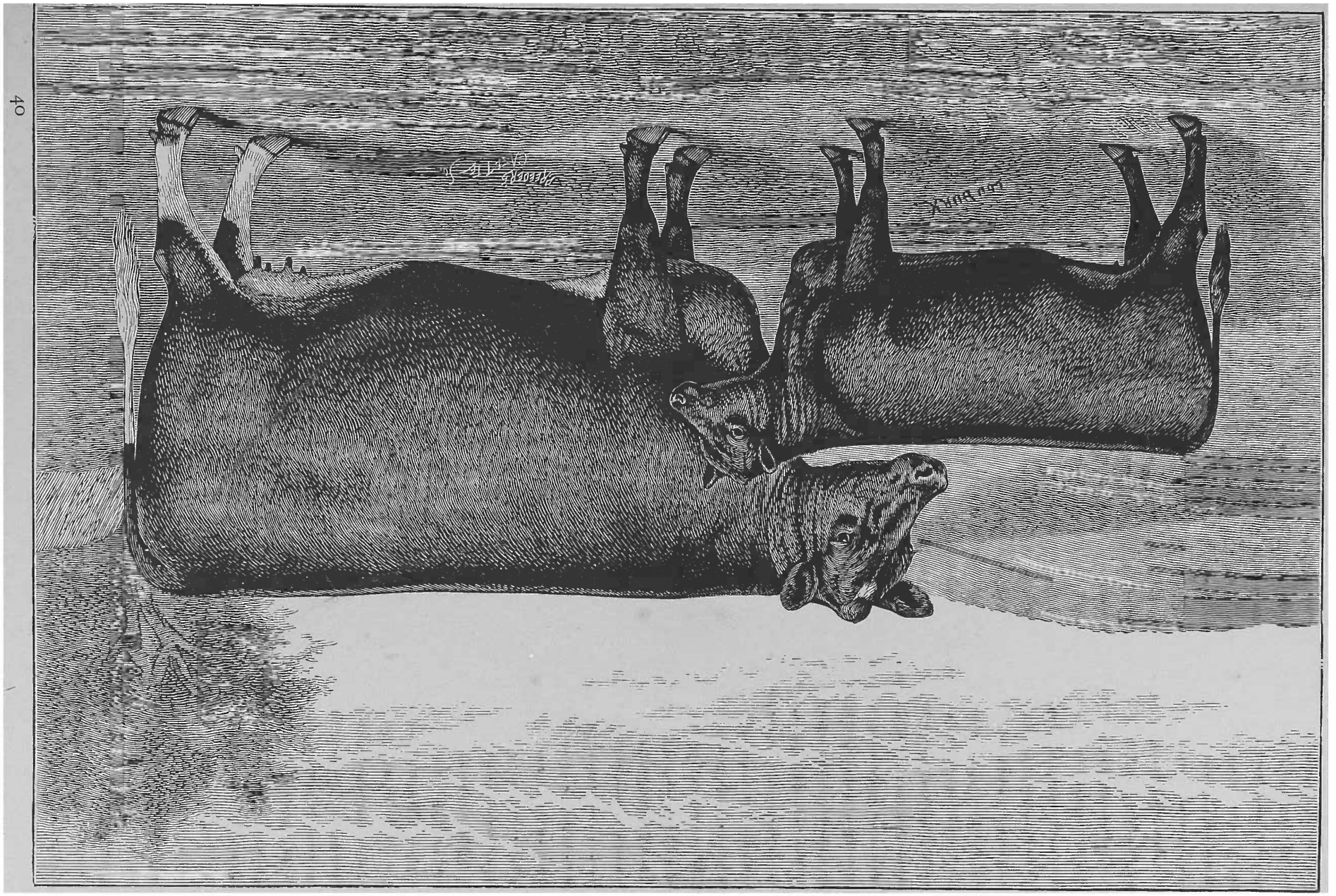
ABERDEEN-ANGUS BULL MODEL PRINCE (4075).

Calved Dec. 13, 1881; bred by A. O. Stephenson, Blairshinnoch, Banff, Scotland; property of Joseph H. Rea, Carrollton, Mo.; got by Edgar Erica (1693) [he by Editor (1460) out of Ella (1205), a daughter of Erica (843)]; dam Model 2d (4307) by Nubian (1294); 2d dam Model of Blairshinnoch (3423) by Bon Accord (446). Model Prince has had a successful career in the show yard, among his triumphs in 1886 having been first in his class for Aberdeen-Angus bull three years old and over at the Kansas City Inter-State Fair. He was imported by his present owner and is used as the premier breeding bull in his "Moss Creek" herd. Sketched from life by Burk.



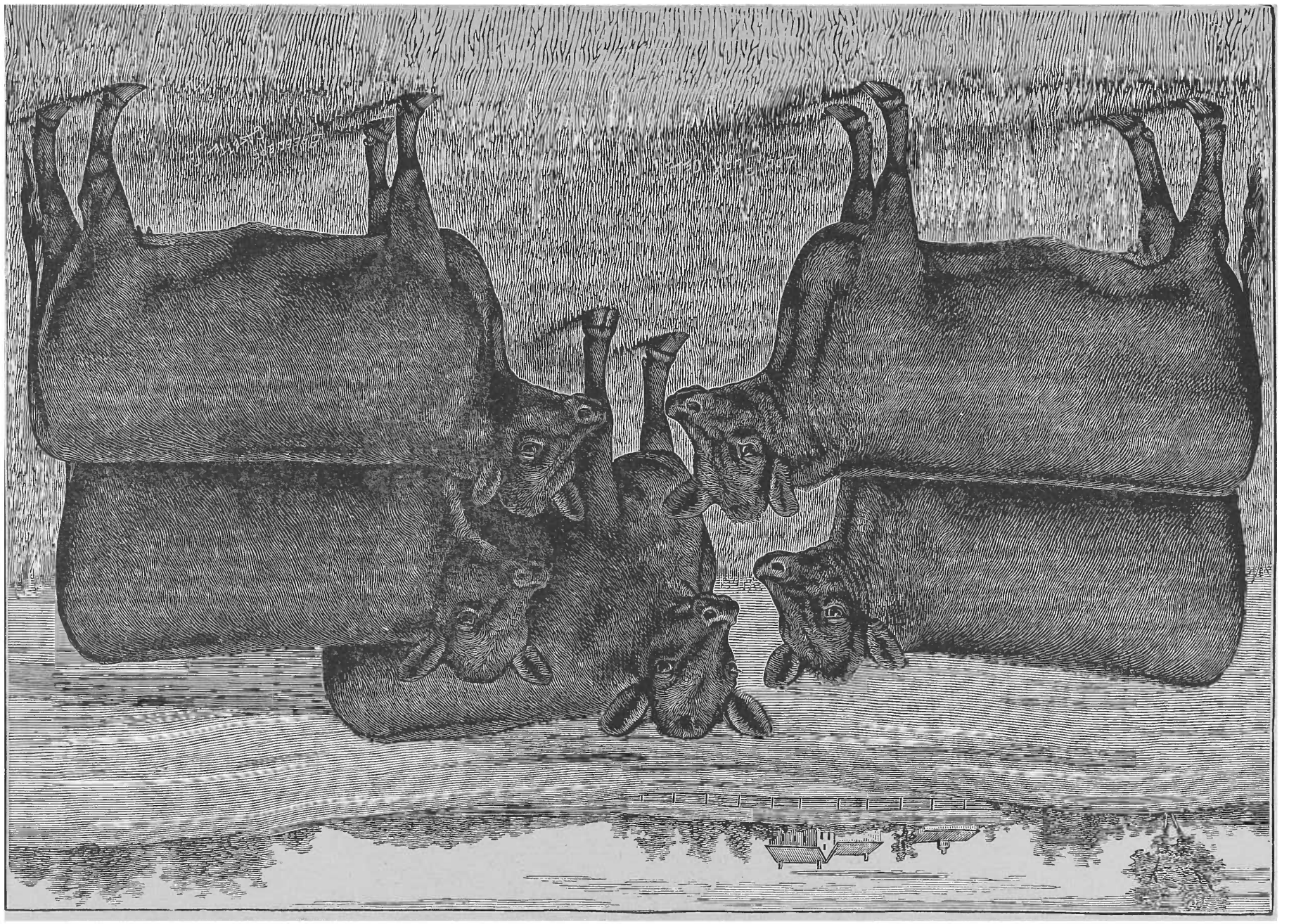
ABERDEEN-ANGUS COW ELIZABETH (1830) AND HEIFER CALF.

Calved March 5, 1882; bred by the Hon. J. H. Pope, Eastview, Can.; property of Messrs. R. B. Hudson & Sons, Carrollton, Mo.; got by Heather Bred Lad 1568 [he by Lowther (1388), out of Blooming Heáther (1484)], dam Canada Lass (5920) by Gamrie Mhor (1240); 2d dam Dandy of Glenbarry (1075) by the prize bull Clansman (398); 3d dam Lucy 2d (1186) by Marshall (399), etc. This cow belongs to the well-known Drumin Lucy tribe, and her calf has for sire the Pride of Aberdeen bull Kabul 1537. Sketched from life by Burk.



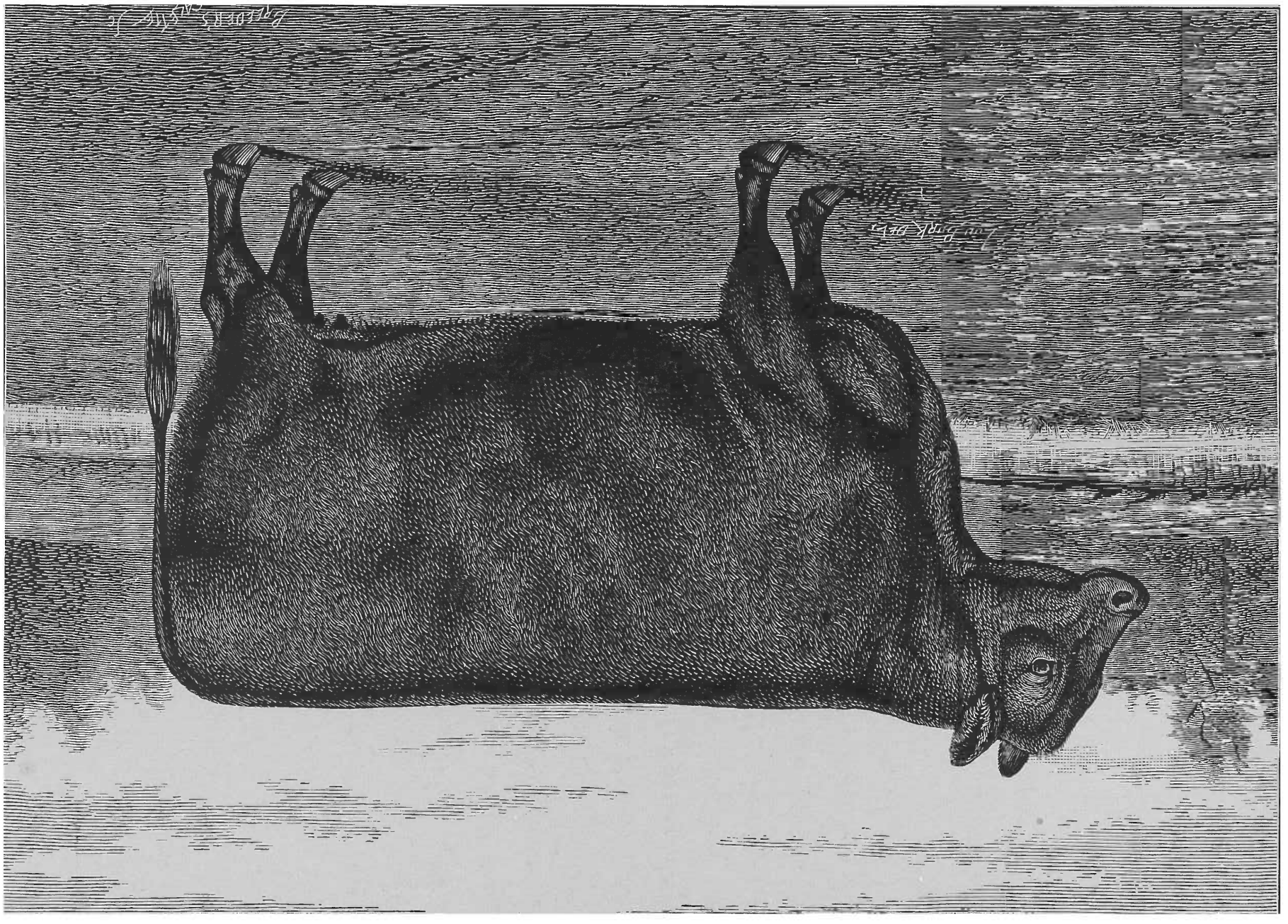
GROUP OF ABERDEEN-ANGUS HEIFERS.

Lady Anne of Hillhurst and Damsel of Hillhurst on the left, Queen Mary of Hillhurst in center, and Moonlight of Hillhurst and Lady Hillhurst of Forbes on the right; all bred by the Hon. M. H. Cochrane, Hillhurst, P. Q., Can., and all sired by his chief stock bull, Paris 3d (2276). [See page 310.] Sketched from life by Burk.



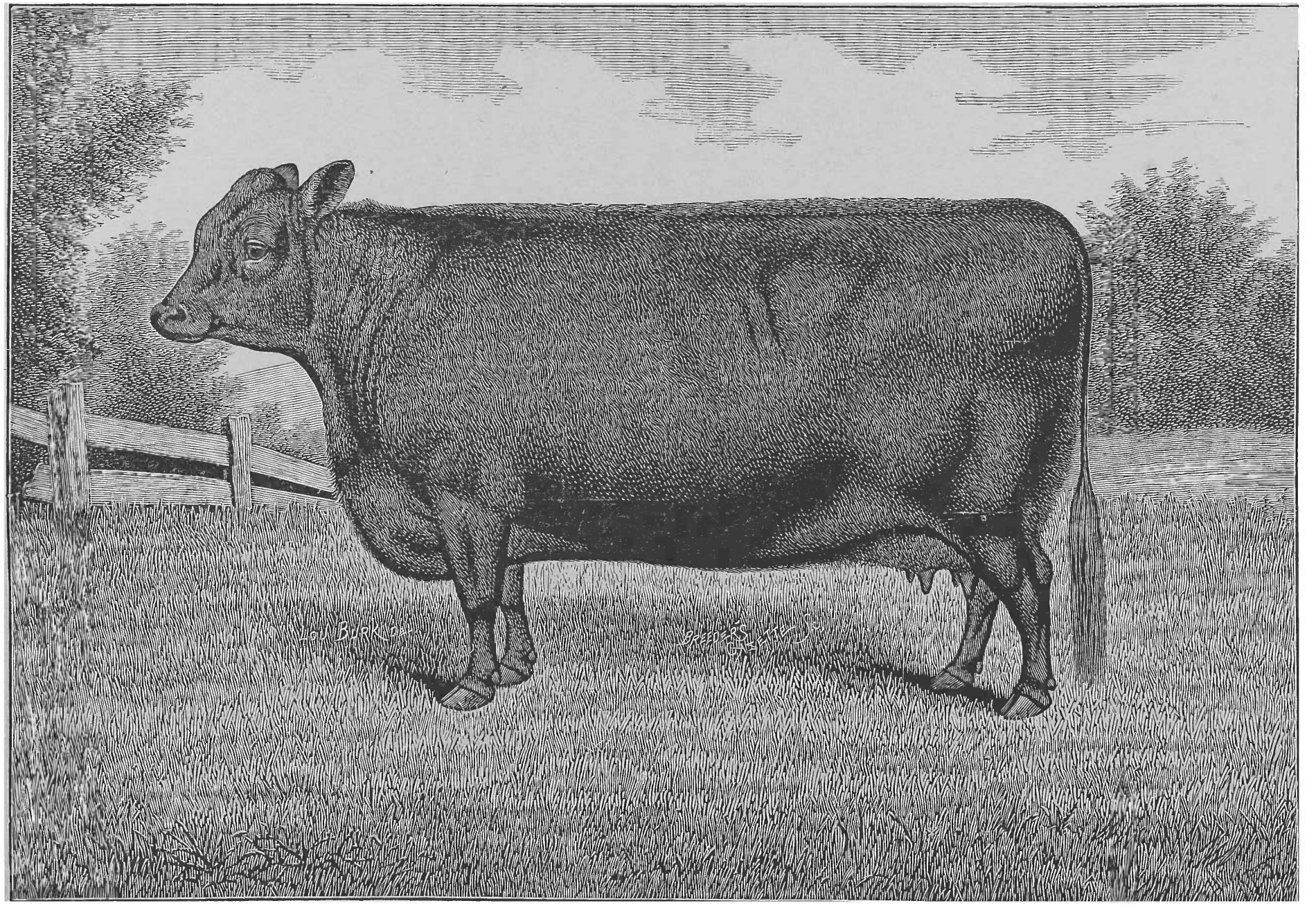
ABERDEEN-ANGUS COW BRUCE'S QUEEN (5312).

Calved March 2, 1879; bred by Mr. David A. Pearson, Johnston Lodge, Lawrencekirk, Scotland; purchased by Mr. Geo. Bruce, of Aberdeen, and sold to her present owners, Messrs. Gudgell & Simpson, Independence, Mo.; got by M. P. (1250), [a richly-bred Pride of Aberdeen bull got by the prize-taking Queen Mother bull Moudiewart (686), out of Pride of Aberdeen 3d (1168) by Black Prince of Tillyfour (366)], dam Annie of Johnston (1212), bred by James Leslie, of The Thorn, and sired by a bull from Tillyfour. Bruce's Queen was first in her class and won a special cup at the Kincardine Show in Scotland in 1881, and since her importation, in the hands of Messrs. Gudgell & Simpson, at the great fairs of 1882 and 1883 was a frequent winner of class and sweepstakes prizes. Sketched from life by Burk.



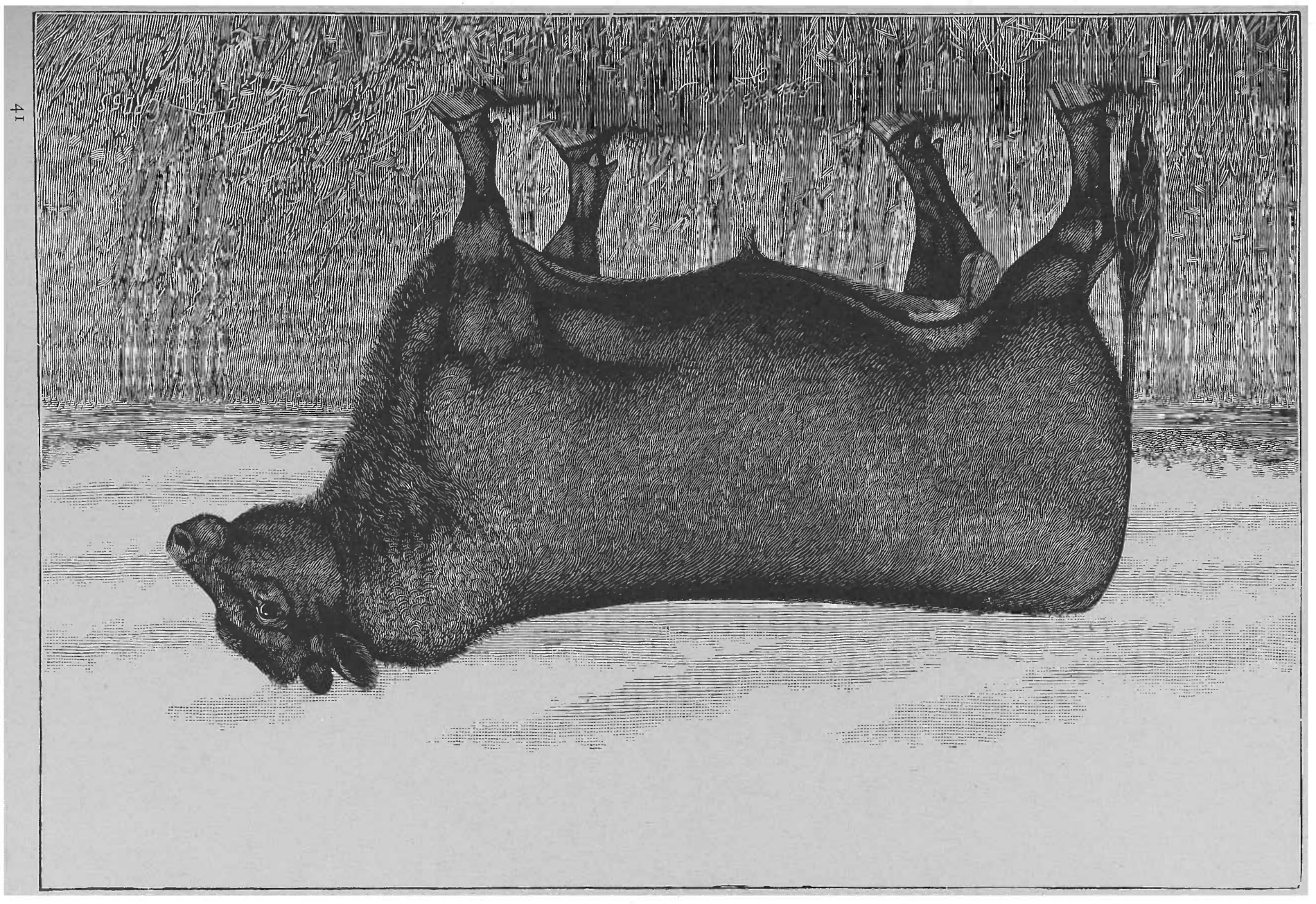
ABERDEEN-ANGUS COW IMP. BLACKBIRD OF CORSKIE 2D (3024).

Calved April 18, 1875; bred by the Earl of Fife, K. T., Duff House, Scotland; imported by the Hon. M. H. Cochrane, Hillhurst, P. Q., Can., and purchased at his sale at Kansas City, Mo., April 26, 1883, by her present owners, the Indiana Blooded Stock Company of Indianapolis, Ind., for $2,050, the highest price ever made by an animal of the breed on this side the Atlantic; got by John Bright (642), [a famous prize bull in Scotland early in "the Seventies," gaining among other honors the male championship of the yard at the Highland Society's Show at Turriff in 1872], dam Blackbird of Corskie (1704) [a prize cow at various Highland and Royal Northern Shows] by Squire (436) [bred at Tillyfour and first-prize bull at the United Banffshire Show of 1871]; 2d dam Lady Ida (1021) [prize-taker at Highland, Banffshire, Cornhill, and other shows from 1867 to 1873] by Black Diamond (464); 3d dam Mayflower 2d by The Earl (291), etc. Blackbird of Corskie 2d stood first in the class for cows at the Highland Society's Show at Perth in 1879, and descends from the celebrated Montbletton Lady Ida or Mayflower family, representatives of which made such extraordinary prices at the dispersion sale of the herd in 1882. Sketched from life by Burk.


LOU BURK
BREEDER

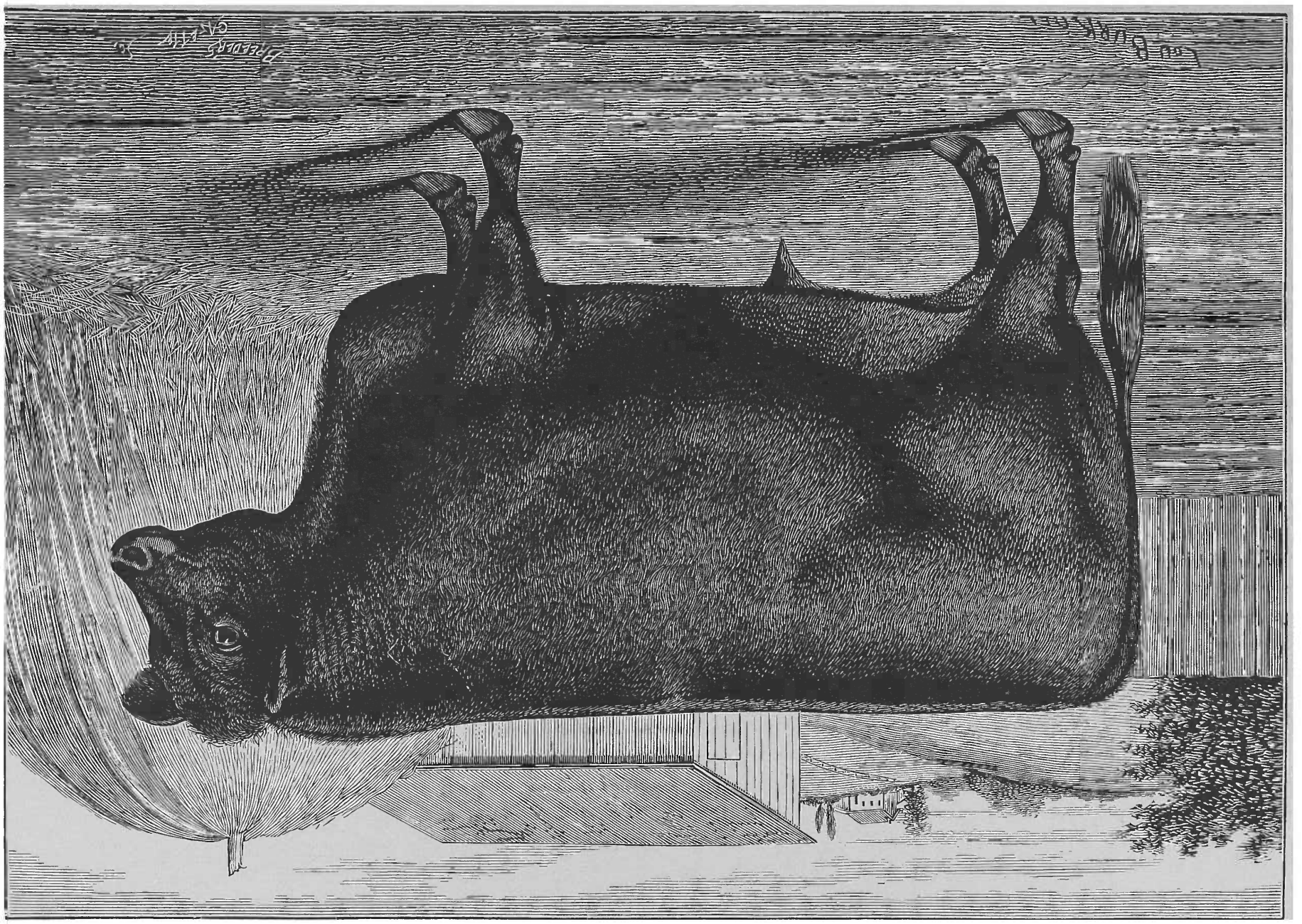
ABERDEEN-ANGUS BULL ERRANT KNIGHT (3714).

Calved July 11, 1883; bred by Owen C. Wallis, Bradley Hall, Wylam-on-Tyne; property of Mr. T. W. Harvey, Turlington, Otoe Co., Neb.; got by Sea King (2334) [a Ballindalloch Sybil got by Justice (1462), out of a cow by Judge (1150), and she out of a daughter of Juryman (404)], dam Errantine (4546) by Challenger (1260) [a Pride bull bred by the Earl of Fife and illustrated in Vol. V of the Polled Herd Book of Scotland]; 2d dam Erica 6th (3023) by Major of Bognie (444), etc., to Erica (843) by Cupbearer (59), the ancestress of the celebrated tribe that bears her name. [See page 300.] Engraved from a painting by Cross.



ABERDEEN-ANGUS BULLOCK BLACK PRINCE.

Calved Feb. 20, 1880; bred by Mr. Maitland, of Balhaggarty, Inverurie, Scotland; selected by Mr. Robt. Bruce, Great Smeaton, for the Messrs. Geary, of Bli Bro Stock Farm, London, Ont., Can., and exhibited by them at the Kansas City and Chicago Fat-Stock Shows of 1883 and 1884. He had stood second in a strong ring of two-year-olds at the Smithfield Show in London before his importation, and was not only a prize-winner at the American shows (among his winnings being the three-year-old championship of the Chicago exhibition of 1883, *judged by butchers*), but probably contributed as much (if not more) than any other one animal ever shown in the West toward popularizing the Aberdeen-Angus breed. He was thickly and smoothly covered with a fine quality of flesh well distributed throughout the most valuable parts of the carcass; showed a beautifully-filled neck-vein, extra thighs and quarters, and netted upon the block 71 per cent of net to live weight, pulling down the scales before slaughter at 2,400 lbs. Sketched from life by Burk.



CHAPTER XII.

GALLOWAY CATTLE.

The Galloways were doubtless closely allied originally to their black polled neighbors of Aberdeenshire and Angus; and there is every reason to believe that until a comparatively recent period no special effort was made to prevent their intermixture, although the circumstances of location and the currents of trade were not such as to promote the same to any great extent. Intentional crossing or mixture of breeds is born of a desire to effect improvement, although such a course of breeding is frequently ill-advised, and there does not appear to have been much effort to improve the quality of Galloway cattle until within a comparatively recent period. From this and other known facts it is argued that there is no breed of cattle that can lay such claim to the title "pure bred" as the Galloways. It is claimed by the partisans of the Galloway breed that while the great improvers of the Hereford and Short-horn races made use of all the material they could lay their hands on for the purpose of improving and building up their own favorite breeds, and while, as they allege, the blood of the Short-horn was largely used as a factor in improving the polled blacks of their Northeastern neighbors, the polled cattle of Galloway and the Western coast of Scotland have been left to themselves, and whatever of improvement has taken place has been the result of selection within the breed itself. The

historian of the breed, Rev. John Gillespie, says that "no man stands out conspicuously among his fellows as having been the chief instrument in improving the Galloways at any particular period of their history." The breed has not had its Collings or its Bates, its Tompkins or its Price, its Watson or its McCombie; and while it is doubtless identical in its remote origin with the other recognized polled breeds of Scotland and its hardy, shaggy, horned neighbor, the West Highlander, Mr. Gillespie heartily seconds the assertion of an earlier writer than himself to the effect that "the breed was brought to its present improved state by the unremitting attention of the inhabitants in breeding from the best and handsomest of both sexes, and by feeding and management," and most of this work has been done within the past fifty years.

As stated in the preceding chapter, no distinction was recognized between the polled breeds of Scotland by the leading agricultural society of that country (the Highland Society) until 1848; and up to 1877 both breeds were recorded in the same herd book, which book had no existence until as late as 1862. But in June, 1877, the Galloway Cattle Society of Scotland was organized, and a separate herd book for Galloways was then established.

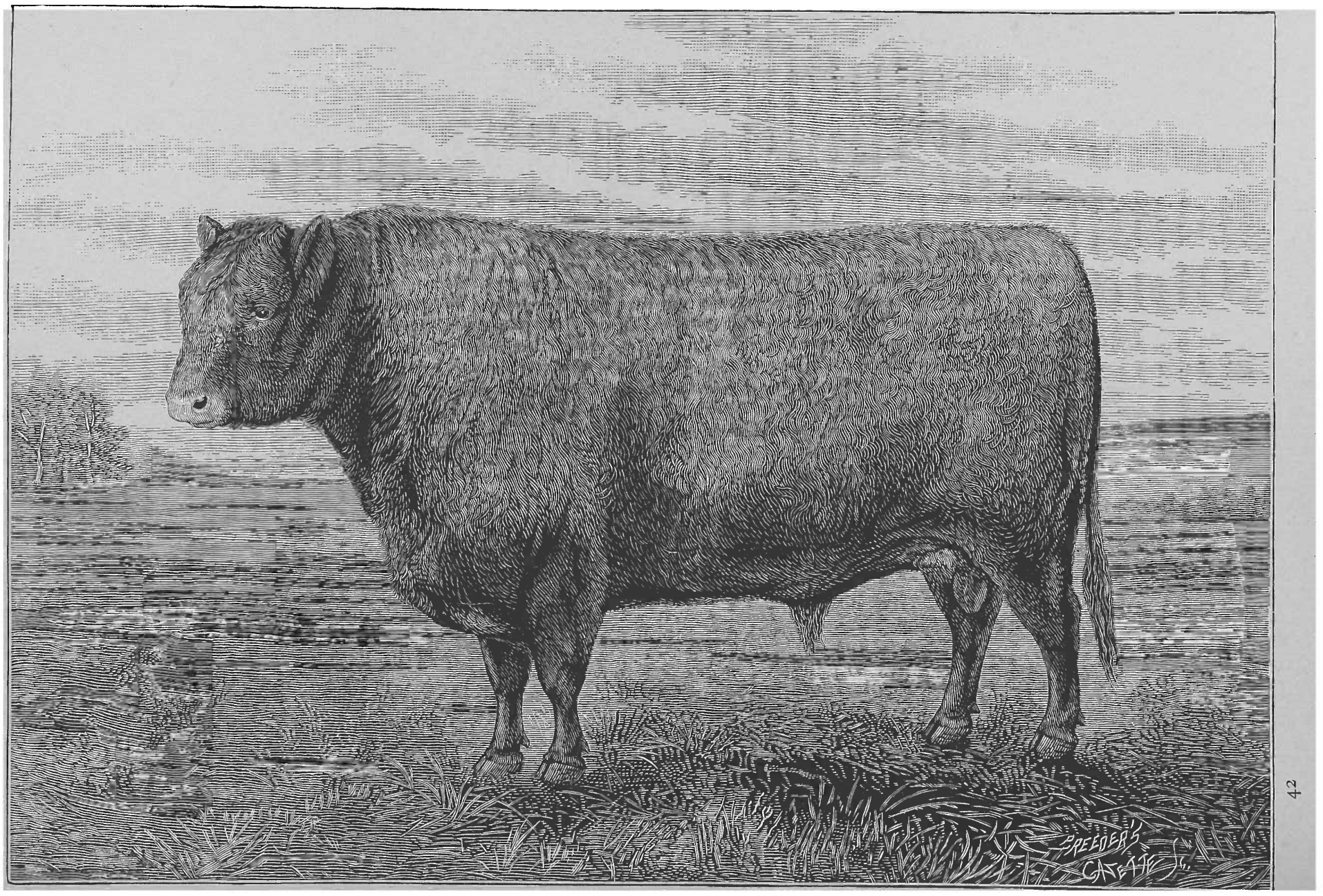
The breed was sparingly introduced into Canada as early as 1853, but they attracted very little attention there or in the United States until the beginning of the great "boom" in the cattle business upon our Western plains some twelve years ago. A herd book for the breed was established in Canada as early as 1872, but it was very lightly patronized until in November, 1882, when the Galloway Cattle Association of North America was organized at Chicago, and since then two volumes of the Galloway Herd Book have appeared.

The Galloways are not a large breed, neither have they as yet developed so great a tendency to lay on fat as characterizes many of the beef-producing breeds, but their partisans claim for them wonderful hardiness and the production of beef of surpassing excellence. In color they are very similar to the Aberdeen-Angus described in the preceding chapter, with the same occasional outcropping or reversion to red, the same occasional presence of white markings on the belly and especially about the udder, and the same entire absence of horns, excepting the rare presence of "scurs," or loose rudimentary horns on the males. Formerly there were some animals of the breed that were belted — marked with a broad band of white around the body — but this mark is no longer allowable in a pure-bred Galloway.

The most notable points of difference between the Galloways and the polled breed of Aberdeen and Angus are that the Galloways have a more rugged appearance; while somewhat smaller in size they are coarser in bone, a point that is especially noticeable in the size of the legs and the tail, and they invariably have a much heavier coating of hair, which is usually soft and wavy. In short, in general form, quality of bone, and heavy covering of hair they bear a close and striking resemblance to the shaggy, picturesque West Highlanders, minus the horns.

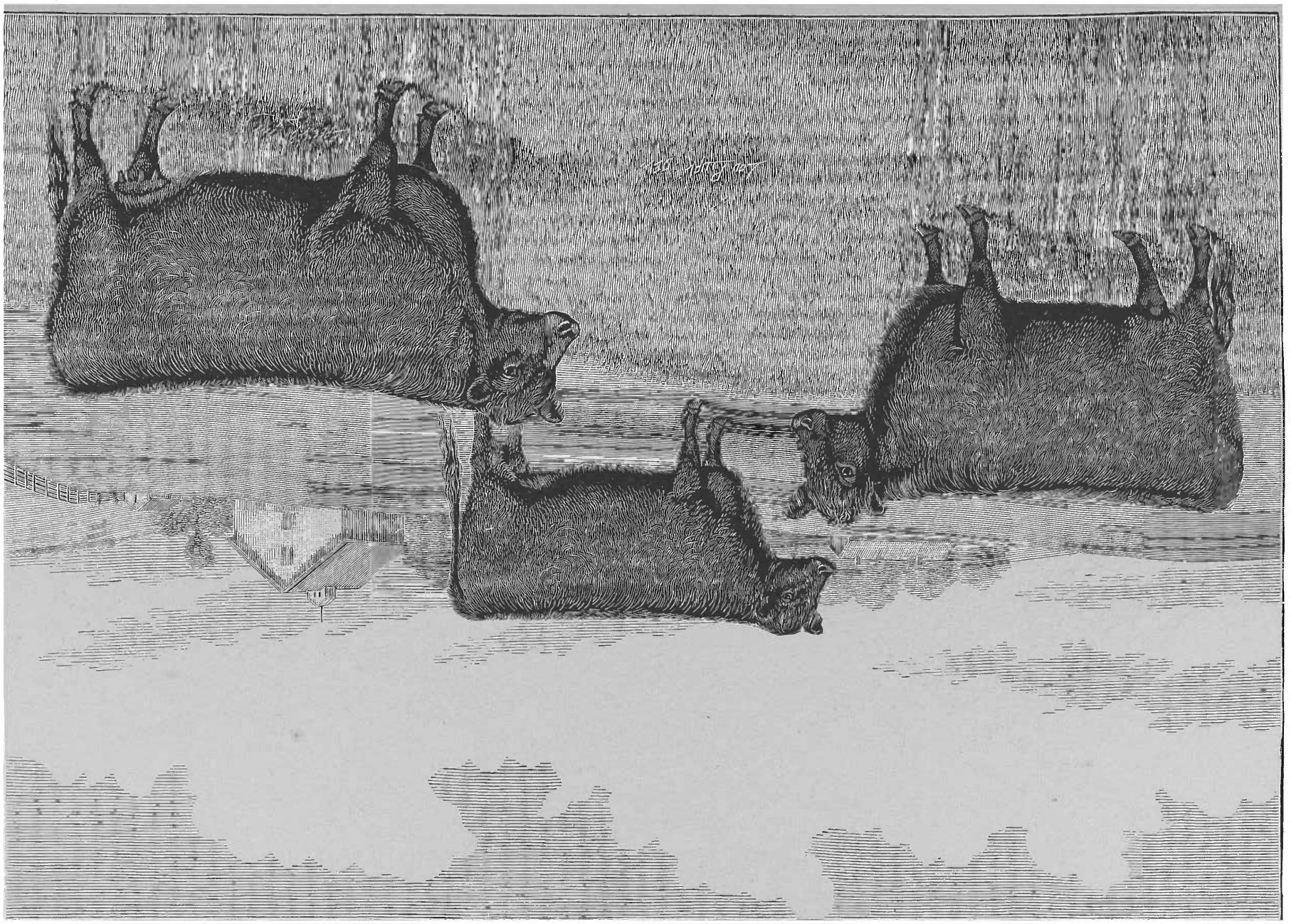
GALLOWAY BULL CRUSADER.

Calved March 6, 1883; bred and owned by Thomas Biggar & Sons, Chapelton, Dalbeattie, Scotland; got by Scottish Borderer (669), son of Sir William of Drumlanrig (1039); dam Clara 4th of Dalbeattie (3963) by Earl of Nithsdale (1035); Clara 3d of Dalbeattie (3057) by Stanley of Dalbeattie, etc. Crusader has been a remarkably successful prize-winner, he having among other high honors won the champion cup for best bull of any age at the Highland Society's Show at Edinburgh in 1884, when he was only about sixteen months old, and was first in his class at the same Society's Show at Aberdeen in 1885. Engraved from a photograph of an oil painting, showing the animal at two years and nine months old.


BREEDER'S
GAZETTE

GROUP OF GALLOWAY COWS.

The engraving on the opposite page is a thoroughly characteristic representation of the Galloway breed. Sketched from life by Burk, from the large herd of this breed owned by the Inter-State Galloway Cattle Company, Kansas City, Mo. The names of the animals represented in the engraving have not been furnished, but the artist who made the sketch pronounces them among the very best specimens of the breed he has seen.



CHAPTER XIII.

DEVON AND SUSSEX CATTLE.

DEVONS.

The Devon is one of the most ancient and purest of the English breeds and takes its name from the county in which it is chiefly bred—the north part of Devonshire—which has been the home of a hardy, active race of red cattle from the earliest periods of reliable history touching any of the English breeds of cattle. It is generally believed that, like the Galloway and the West Highlanders of Scotland, the Devon has been developed, without the aid of outcrosses, from the aboriginal race of cattle that was found upon the island of Great Britain; and in many respects, especially in form, size, and muscular activity, there is a very striking similarity between the Devon and the Scotch breeds above mentioned. The literature of the breed is meager, and but little has been placed upon record touching the development of the breed or those who have been prominent in its improvement that would be of interest to the general reader. The muscular activity and hardiness of the Devon have from their earliest history made them famous as work-oxen, while their uniformity in form, disposition and color, with their beautifully tapering horns, has always caused them to be regarded as the most attractive of all breeds when in the yoke.

The true Devon color has always been red; varying, as Mr. J. T. Davy, the editor of the Devon Herd Book, expresses it, "from a dark to a lighter or almost chestnut shade, which in summer often becomes beautifully mottled with darker spots." White markings are always regarded as objectionable unless it be on the udder and the brush of the tail. The breed is not reckoned as among the larger ones, certainly not so large as the Short-horn, the Hereford, or the Aberdeen-Angus; but comparing favorably in point of size with the Galloways, and somewhat larger than the West Highlanders, but, as bred in more recent years, with perhaps a greater tendency to lay on outside fat than the Scotch breeds, which it so closely resembles.

The publication of a Devon Herd Book in England was commenced in 1851 by Capt. Davy, by whom it is still kept up, and to the introductory matter in the various volumes of this work the reader is referred for particulars concerning the early Devon herds of that country.

The breed was doubtless introduced into this country, especially into New England, at a very early date, as cattle possessing all the characteristics of the pure Devon have been numerous in the New England States from the beginning of the present century. Mr. James Buckingham, editor of the American Devon Herd Book, gives an account of an importation by Messrs. Winthrop and Davenport about the year 1800, and the same author tell us that Gen. Eaton imported some Devons into Otsego Co., N. Y., in 1805. The first important early importation of which any record has been made was that of Mr. Robert Patterson, of Baltimore, in June, 1817, and from this most of the recognized purely-bred American Devon herds

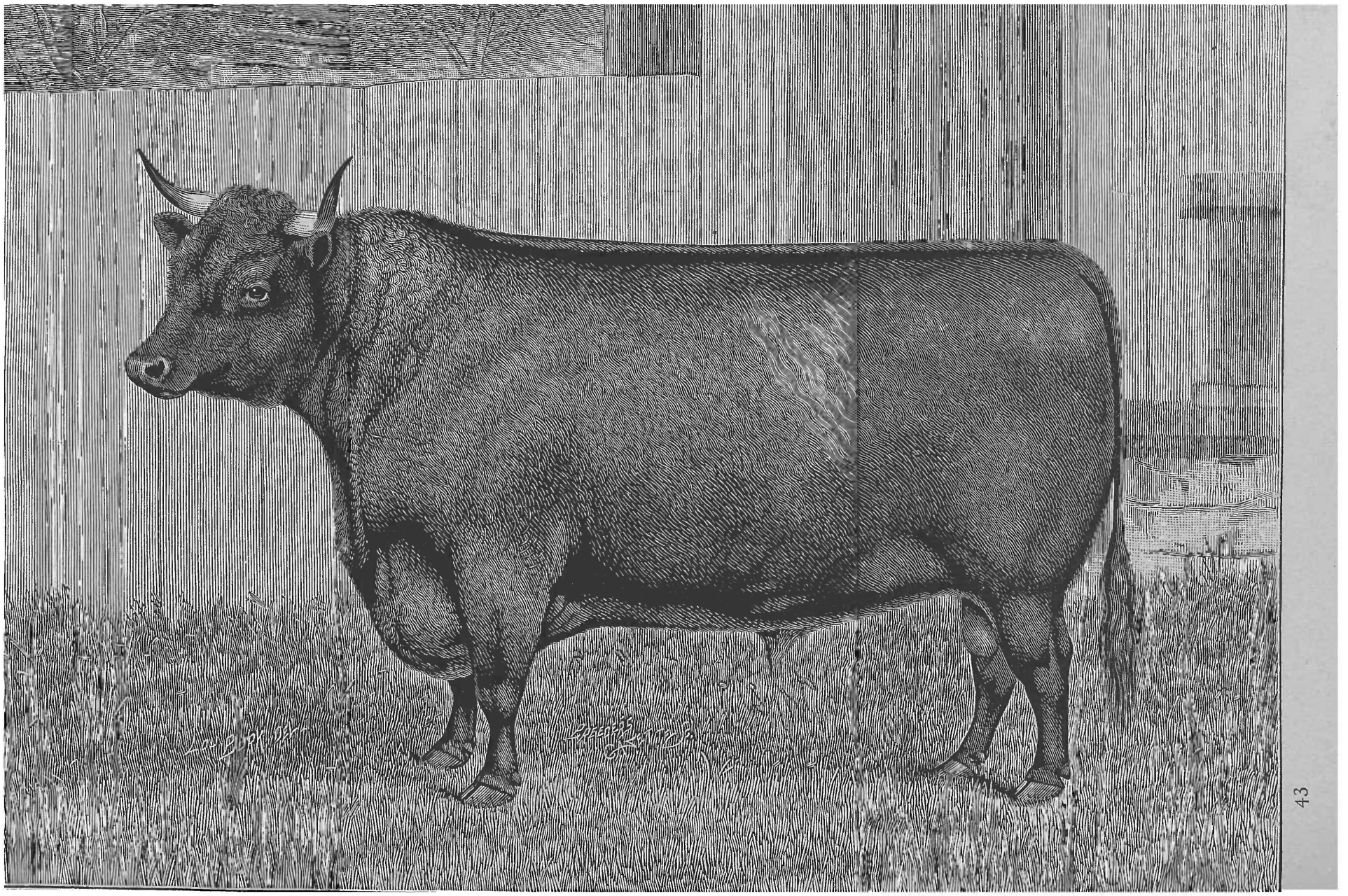
are descended. [It is a singular coincidence that the first historical importation of Short-horns and of Herefords should also have been made the same year and landed at the same port. See pages 206 and 258.] The American Devon Herd Book was established in 1880, and has since then been conducted by Mr. James Buckingham, of Zanesville, O., under the direction of the American Devon Association.

SUSSEX.

The origin, history and character of the Sussex breed is so similar to that of the Devon that they may well be treated of in the same chapter. Taking their name from the County of Sussex, in England, where they were originally bred, they have undoubtedly sprung from the same stock. Rich pastures, a more plentiful supply of food, and a climate somewhat more genial, has probably brought about all the differences that now exist between the two breeds. Give to the average specimen of the Devon breed somewhat greater size, with heavier bone, thicker horns, rather less of muscular activity, and perhaps rather inferior dairy qualities, but without changing the color in the least, and we have the Sussex. The breed has been but sparingly and quite recently introduced into the United States, but they have certainly made a very favorable impression, and the fact that a yearling steer of this breed exhibited by Mr. Overton Lea, of Tennessee, at the Chicago Fat-Stock Show of 1885, was awarded the first prize for the best yearling carcass of dressed beef and received one vote for sweepstakes as best dressed carcass of any age, has served to attract marked attention to the breed within the past year.

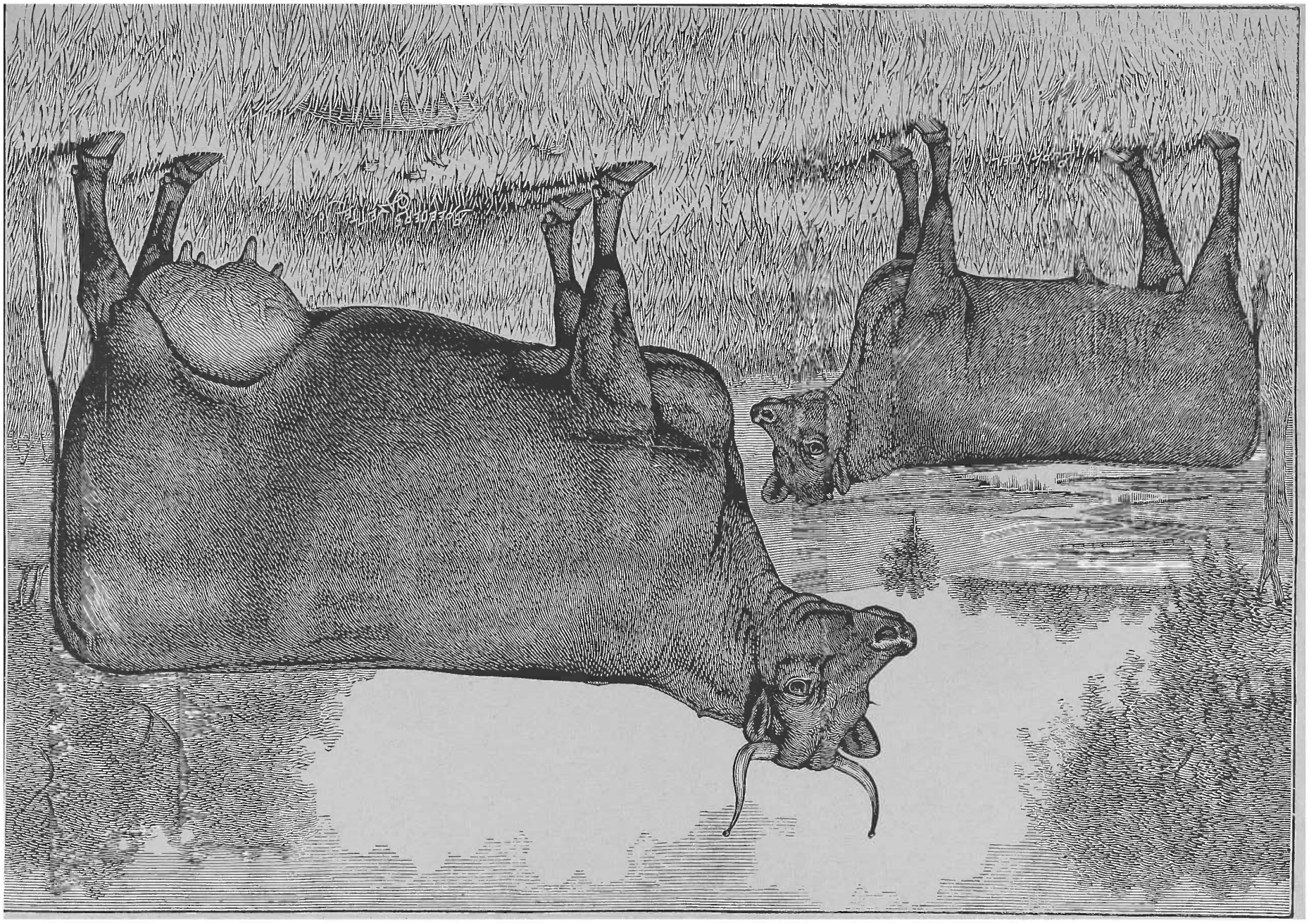
DEVON BULL CARLOS 2013.

Calved Aug. 9, 1881; bred by B. F. Peck, East Bethany, N. Y.; got by Flitton 7th 1490, son of Duke Flitton 9th 66; dam Cowslip (3303), a cow bred by Walter Farthing, of Somerset, England, and imported in 1873 by J. Carter Brown, of East Greenwich, R. I. She was by Master Alic (881), and her dam was Curley (1888) by Leopold (447). Carlos is now owned (1886) by J. W. Morse & Son, Verona, Wis., and has had an almost unbroken career of show-yard successes in the Devon classes at leading Western fairs since passing into his present owners' hands. Sketched from life by Burk in 1885.



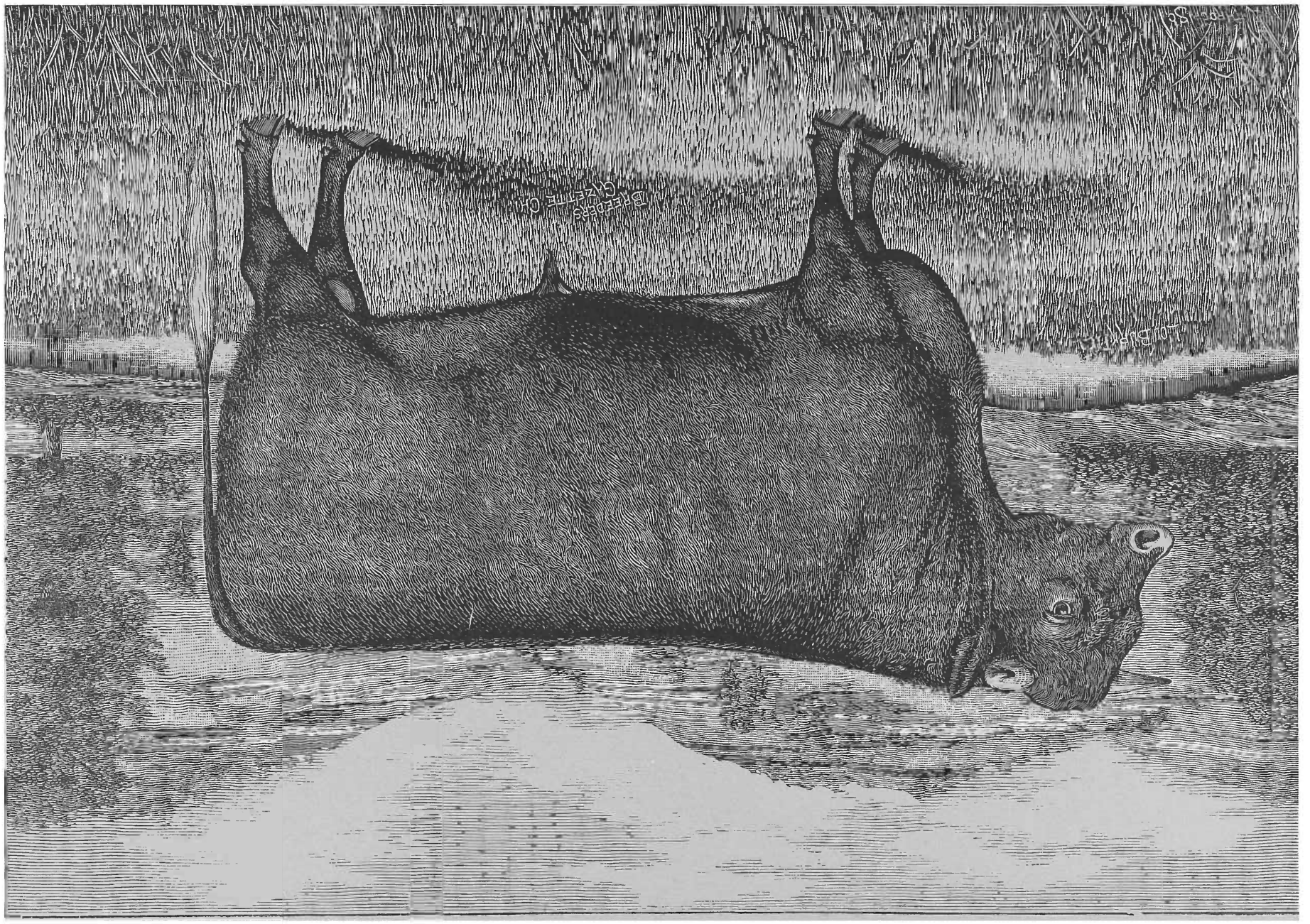
DEVON COW WISCONSIN BELLE 2831 AND CALF.

Calved April 7, 1878; bred and owned by George Baker & Son, Hustisford, Wis.; got by Buckeye 352, son of Dan Baker 444; dam Fanny 2d 1238 by Rowley 2d 1079; 2d dam Fanny 1237 by Rowley 1078. The calf, only a few months old when the sketch was made, is O. K. Boy 2872, got by Clannaboro 1967, a bull bred by R. Stranger, of Devonshire, England, and imported by H. C. Burleigh, of Vassalboro, Me., expressly as a stock bull for the Messrs. Baker. He was by Corydon 2d 1966. Wisconsin Belle is said to possess unusual excellence as a dairy cow, having averaged 48 lbs. of milk per day on grass alone during the month of June, 1884. Sketched from life by Burk in June, 1884.



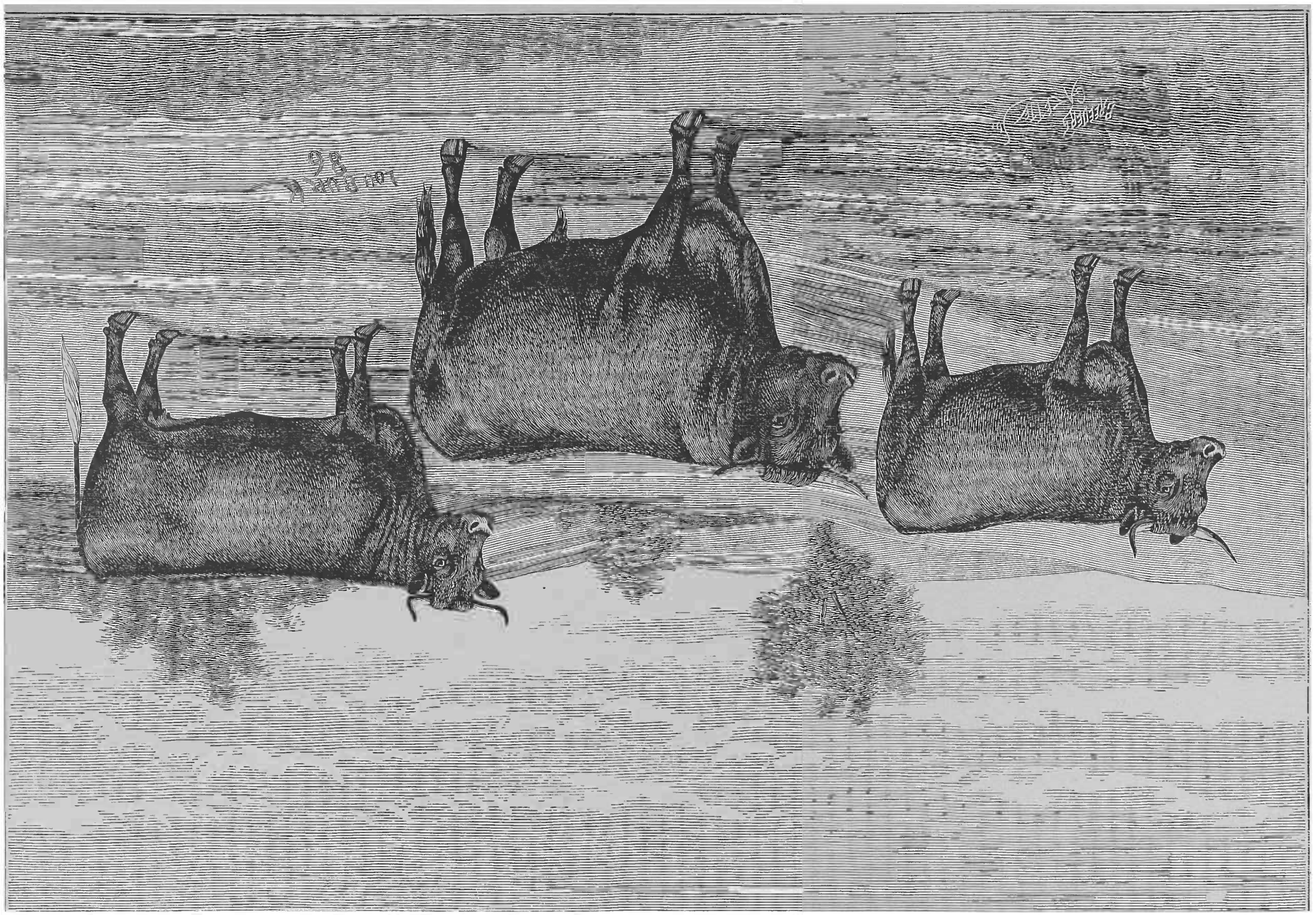
SUSSEX BULL.

The engraving on the opposite page is after a sketch from life made in September, 1882, by Burk of a Sussex bull imported and owned at that time by Mr. George Whitfield, of Rougemont, P. Q., Can.



GROUP OF SUSSEX CATTLE.

The engraving on the opposite page represents a group of Sussex cattle imported and owned by Mr. Overton Lea, of Nashville, Tenn., whose success at the Chicago Fat-Stock Show of 1885, with a yearling steer of this breed, is referred to on page 335. The bull shown in the engraving is General Roberts (500), calved March 13, 1882, bred by Mr. Alfred Agate, of Sussex County, England, and was first-prize winner in his class as a two-year-old at the "Royal" of 1884. He has also proved himself a very successful sire. His weight is stated to be over 2,200 lbs. at four years old. The cow on the right is Milk Maid 3d, four years old, bred by E. & A. Standford, of Sussex, England; and the heifer, two years old, is Rosedew 15th, bred by Mr. Geo. Whitfield, of Rougemont, P. Q., Can., from imported sire and dam.



CHAPTER XIV.

RED POLLED CATTLE.

An acquaintance with the Scotch breeds of polled or hornless cattle on the part of American cattle-breeders within the past fifteen years, coupled with the fancy for the red color which so generally prevails in this country, has served to direct attention in a marked degree to a breed hitherto but little known among us, viz.: the Red Polled cattle of Norfolk and Suffolk Counties in England. Like the Devon, the Sussex, and the Galloway, but little is known of its origin; and although the existence of polled cattle of various colors, the red predominating, and possessing dairy qualities of a high order, is clearly established as far back as 1780 in these counties, yet the effort for its preservation in an unmixed state is of comparatively recent origin. Formerly the breeds of Norfolk and Suffolk were not regarded as the same. While both were red and hornless, yet the red polled cattle of Suffolk were unquestionably somewhat larger and coarser than were those of Norfolk, but under the system of breeding followed for many years past and the fact that they are now all classed as one breed under the name of Red Polled cattle, and all recorded in one herd book, this difference is fast disappearing. A herd book for this breed was established by Mr. Henry F. Euren, of Norwich, in 1874, and since that time

stimulated largely by the demand for polled or hornless cattle in America, they have advanced rapidly in popularity, especially in this country.

In the Red Polled Herd Book above referred to the editor, alluding to the fact that formerly the cattle of Norfolk and Suffolk were of various colors, such as red-and-white, brindle, and yellowish-cream color, says: "The fashion has during the last forty years set steadily in one direction. The red, which is now recognized as the mark of excellence, is a deep, rich blood-red, and the spot of white on the udder, which Mr. George held to be a sign of good breeding, has been crossed out. The predominance of the deep red shows plainly the degree in which the old Norfolk breed has affected the polls; and, on the contrary, the freedom from horns and from white on the udder and face is evidence of the persistence of the Suffolk Polled character. The amalgamation of the two varieties — Norfolk Polled and Suffolk Polled — may with certainty be traced from the year 1846. Both counties henceforth met in an honorable competition in the show yard. Purchase of the handsomest and truest bred red stock became the desire of all the breeders. The result of this zeal was soon made evident, not only at county shows, but also at the Royal Agricultural Society meetings. The breed, however, continued to be without a name until the Royal, at the Battersea meeting in 1862, opened classes for 'Norfolk and Suffolk Polled' cattle. This cognomen was thereupon adopted by Norfolk, but it was never accepted by the Suffolk Society, whose practice it has been either to provide classes for 'Suffolks,' or — and this very recently — for 'Suffolk and Norfolk Polled.' This breed now having its herd book, and being distributed far beyond the boundaries

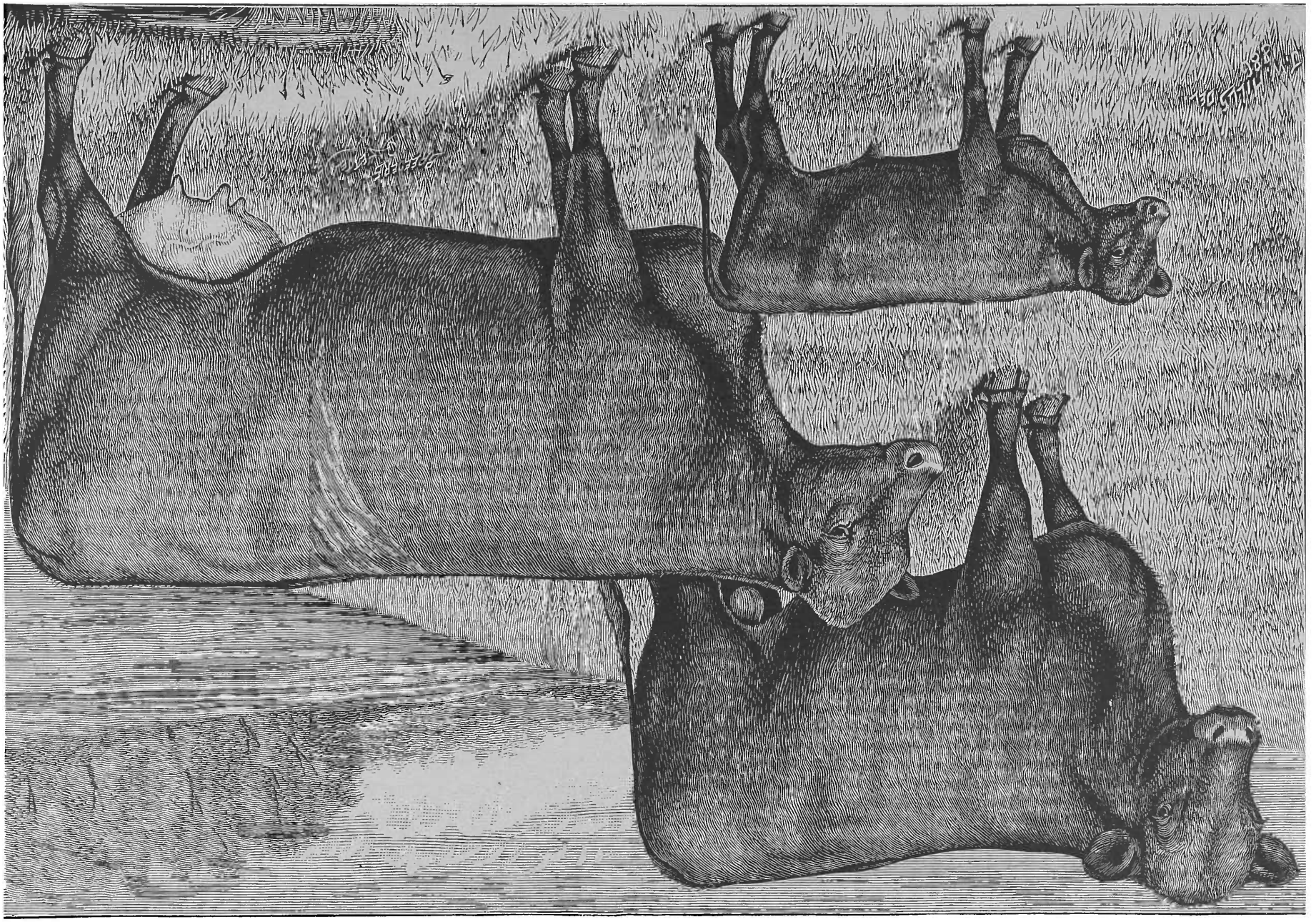
of the two counties, is henceforth to be known as the 'Red Polled,' and the register as the 'Red Polled Herd Book.'"

A Red Polled Cattle Society was organized in this country in November, 1883, and an American Red Polled Herd Book is now carried on, one volume of which has been issued. Mr. J. C. Murray, of Maquoketa, Ia., is Secretary of the Society and has charge of its Herd Book. Those in search of such particulars as are known concerning the history of the breed are referred to the introductory matter contained in the above-mentioned Herd Books.

In general appearance the Red Polled cattle are very similar to the Devon, barring the horns. They were originally celebrated more for dairy qualities than as a beef-producing breed, but the efforts of breeders of later years appear to have been largely devoted toward effecting improvement in the latter quality, and in this they appear to have met with a large measure of success. The uniform red color and the absence of horns are firmly fixed characteristics, and their partisans claim for them a combination of beef-producing and dairy qualities that are not equaled by any other hornless breed.

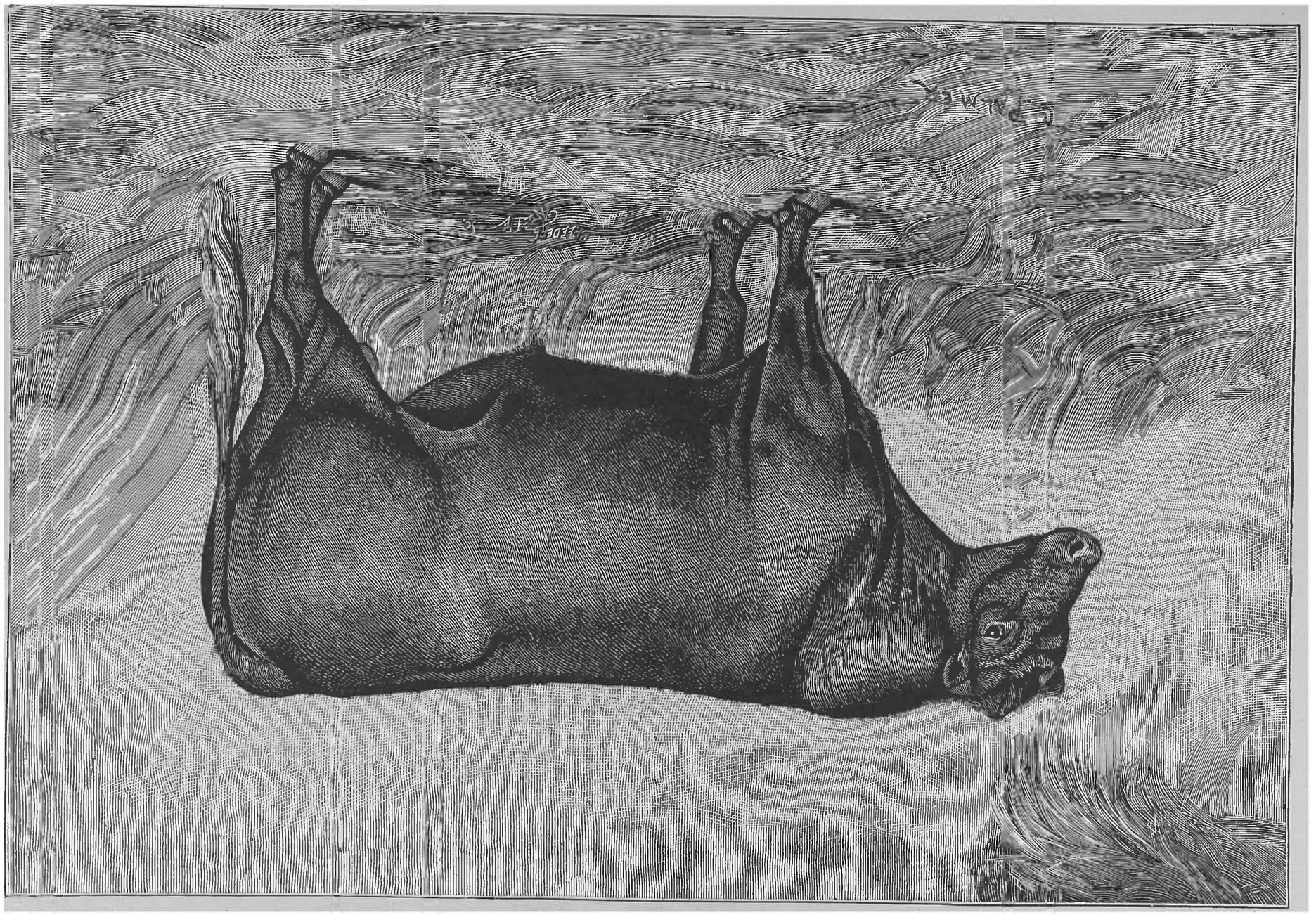
RED POLLED COW DUCHESS OF IOWA (2772).

Calved April 2, 1883; bred by G. F. Taber, Patterson, N. Y., and calved the property of Gen. L. F. Ross, Iowa City, Ia.; got by imp. Mason (698), dam Jilt by Handsome Prince (317); 2d dam Rosebud by Baron Handsome (254). Also her yearling bull calf Slasher 2d (1076) by Prospero (732), and sucking calf Hawkeye by Prime Minister (545). [See page 450.] The sketch of the group was made when the calf was only twenty-four hours old. The cow Duchess of Iowa was the first pure Red Polled heifer calved in the State of Iowa; at three years old her weight was 1,110 lbs. Slasher at one year old weighed 720 lbs. Sketched from life by Hills.



RED POLLED BULL PRIME MINISTER (545).

Calved Jan. 11, 1881; bred by Nicholas Powell, Norfolk, England; imported June, 1883, by Geldard & Busk and now (1886) owned by Gen. L. F. Ross, Iowa City, Ia.; got by Norfolk John 2d (527), dam Primrose 3d by Norfolk John (131); 2d dam Polly (416). Sketched from life by Palmer.



CHAPTER XV.

HOLSTEIN-FRIESIAN CATTLE.

To write the history of the origin of this breed is simply impossible, for the breed itself is older than the written history of the country of its nativity, North Holland and the Netherlands. As early as 1350 a French historian states that Holland had for five hundred years previously been famous for its dairy products, and it is believed that in the early efforts at improvement in the breeds of cattle for dairy purposes nearly all other countries drew upon this fountain-head to aid in accomplishing their object.

Prof. Hengerveld, in a history of the breed prepared for the Massachusetts Agricultural Society in 1872, says that "The genealogy of the Netherland cattle is pure and unadulterated, and it is at least 2,000 years old;" and in speaking of its influence upon the cattle of the adjacent counties it is stated in the introduction to the third volume of the Dutch-Friesian Herd Book that:

"It has been a race stock, sending out branches over all the lowlands of Northern Europe. The Oldenburgh breed, the Breitenburg breed, the Ditmarshers, the two varieties of Groningen cattle, the Zeeland cattle, and the black-and-white cattle of Flanders, all have sprung from it. As a central stock, mainly bred in Friesland and North Holland, it has always maintained its pre-eminence, and

from it is continually drawn the elements for the improvement of the other breeds. Probably there is no other breed or race of cattle that has received less admixture of other blood during the long period over which this sketch extends. Yet it cannot be denied that admixture from other races has taken place. The ravages of war and disease have sometimes compelled importation to replenish the depleted herds. At such times resort has been made to French and German breeds. English breeds have also been introduced to a limited extent. Red-and-white offspring, from black-and-white ancestry of several generations, are sometimes produced. These have come to be considered, in the Netherlands, as of the same original breed, although the evidence of reversion is unmistakable.

"Within the last ten years a degree of interest has been awakened in several parts of the Netherlands with a view to the formation of an improved breed. Two associations of breeders have been established and a class of superior cattle selected and registered as foundation stock. At the present time this class numbers about four thousand animals, about equally divided between the Netherlands and the Friesian Associations. In the beginning neither Association made any distinction in the colors, regarding all as equally pure, and worthy of entering into the formation of the improved breed. The Friesian Association has advanced to the classification of the colors and to the breeding of the variegated black-and-white as a distinct and separate class. This class very largely predominates. At the present time at least nine-tenths of the registry of both herd books are of these black-and-white variegated cattle. Several volumes of the Friesian Herd Book are exclusively of this class, and it requires but little foresight to discover that the time

will shortly come when the other colors will be entirely dropped. This class of cattle are of very nearly uniform build, size, and quality. Full-grown cows will weigh from 1,000 to 1,500 lbs. in moderate flesh. The great majority would, however, be included in a range from 1,100 to 1,300 lbs., and the mean of 1,200 lbs. may be regarded as the live weight of the average Holstein-Friesian cow."

But while a general uniformity in breed characteristics has prevailed among the cattle of North Holland and the Netherlands for hundreds of years, yet there have been minor differences in the cattle of the various districts; and especially in the matter of color there has been a lack of uniformity, as shown in the above extract, although the piebald black-and-white has long been the prevailing one throughout the entire region above mentioned. In recent years the tide has set strongly in favor of this as against all other colors, but the black-and-white characteristic has not been established so long and so thoroughly as to prevent an occasional reversion to red instead of black spots, and in some cases to the pure white, which was once not at all uncommon. Indeed, it is only within a very recent period that the Dutch breeders appear to have given any special attention to the matter of color, that being a point that has been left largely to take care of itself, selections having apparently been made solely with a view to dairy qualities, regardless of the color of the hair. And in the matter of herd books and records of pedigrees Americans appear to have led the way, and set an example which has wisely been followed in the old country — an example that will doubtless lead to still further improvement and the production of a greater degree of uniformity in the breed in its original home.

Cattle of this famous race were introduced into this country at an early date — certainly as early as 1625 — by the Dutch West India Company, and it is said that many other importations were made by the early Dutch settlers of the State of New York, but no effort was made to maintain them as a separate breed or to preserve any records of their descendants. They were crossed and recrossed upon the other breeds and races of the country, and while their identity as a distinct breed was lost they undoubtedly exercised a powerful influence upon the general dairy stock of that region, and subsequently upon the cattle of nearly all the Middle States. But notwithstanding this early introduction of Dutch cattle into America and the unquestioned influence of the blood on the general dairy stock as above stated, it was not until about 1852, when Mr. W. W. Chenery, of Massachusetts, made his first importation, that attention was especially called to their merits as a distinct and desirable breed. Since that time, however, their growth in popular favor has been unprecedented in the history of the improved breeds of this country.

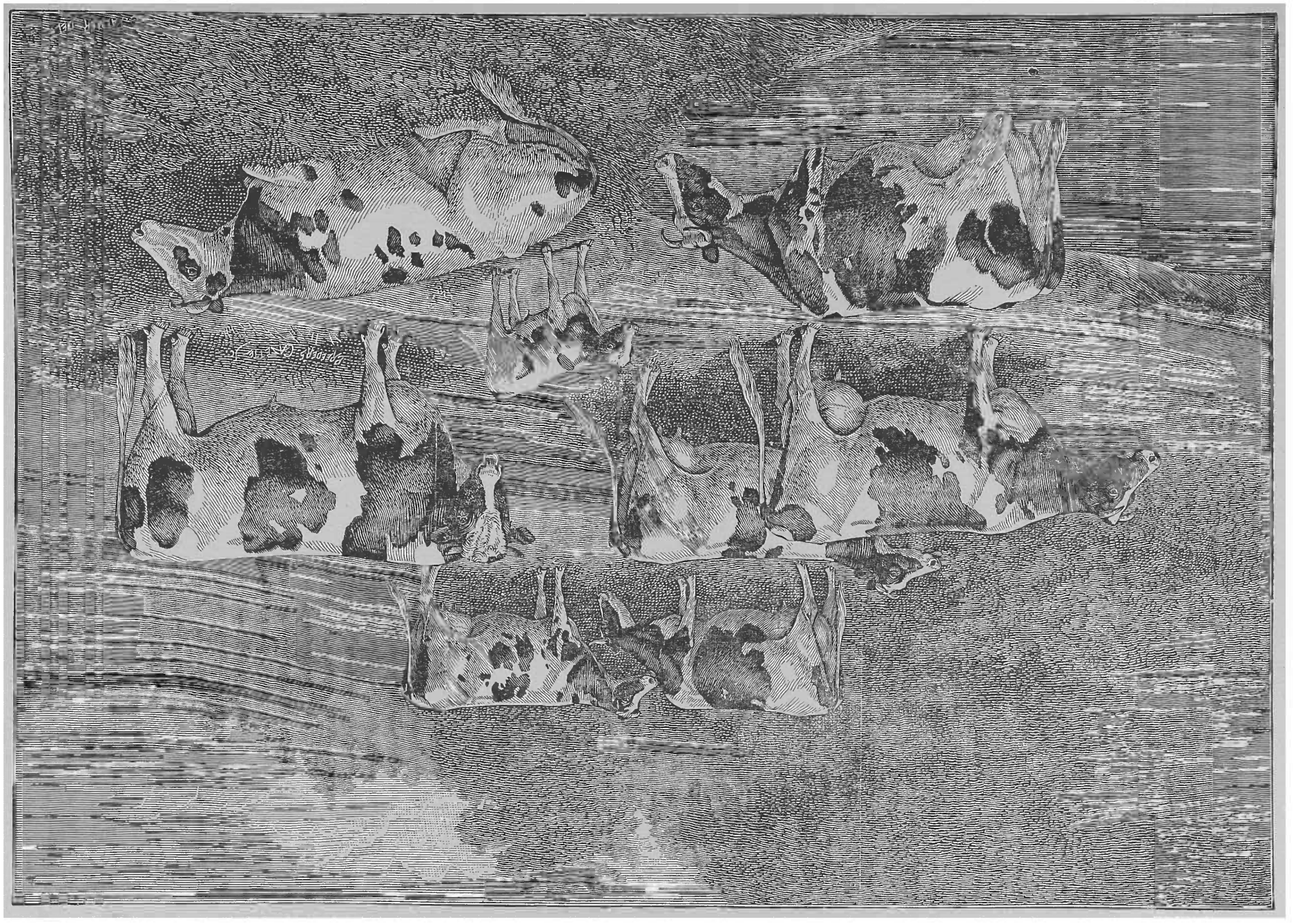
Various names have been applied to cattle of this breed in the United States, and the diversity of usage on this point, as well as on the restrictions and regulations essential to registration, led to no small degree of controversy, and finally to the organization of two separate societies and the publication of two herd books, one known as the Holstein, of which nine volumes were issued, and the other the Dutch-Friesian, which reached its fourth volume. Early in 1885, however, a union of these two associations was effected, and the compound Holstein-Friesian was agreed upon as a compromise name to be recognized from that time onward. Since then the original herd books of both societies have been discontinued, and Vol. I of

a new herd book, the Holstein-Friesian, has been issued. Thomas B. Wales, Jr., of Iowa City, Ia., is Secretary of the consolidated organization, and has charge of its Herd Book.

That these cattle possess almost unequaled capacity for the production of milk and cheese will scarcely be questioned; but they have not been particularly famed as butter-producers, although there have been instances of remarkable capacity in this direction as well. The cow Mercedes, illustrated in this volume on page 365, was awarded the Challenge Cup offered by the *Breeder's Gazette* for the greatest butter yield for thirty consecutive days for the year ending July 1, 1883, open to all breeds; her yield, thoroughly well authenticated, having been 99 lbs. 6½ oz. of unsalted butter. And in the matter of butter production it is doubtless true that the general quality of the Holstein-Friesian breed has been greatly improved within the past decade. Some remarkable yields of both milk and butter are mentioned in connection with the illustrations of the breed which are to be found on the following pages. It is also claimed by the partisans of the breed that they possess a considerable degree of merit as beef producers, and certainly some branches of the family, notably the Oldenburgers, are among the very best cattle of continental Europe for that purpose; but it is mainly as a dairy breed that the Holstein-Friesian has gained its way to popular favor in America. They possess large frames, as a breed they have unusually good digestive powers, and the young animals make a rapid growth. No colors other than the piebald black-and-white are recognized among pure-bred Holstein-Friesians in this country.

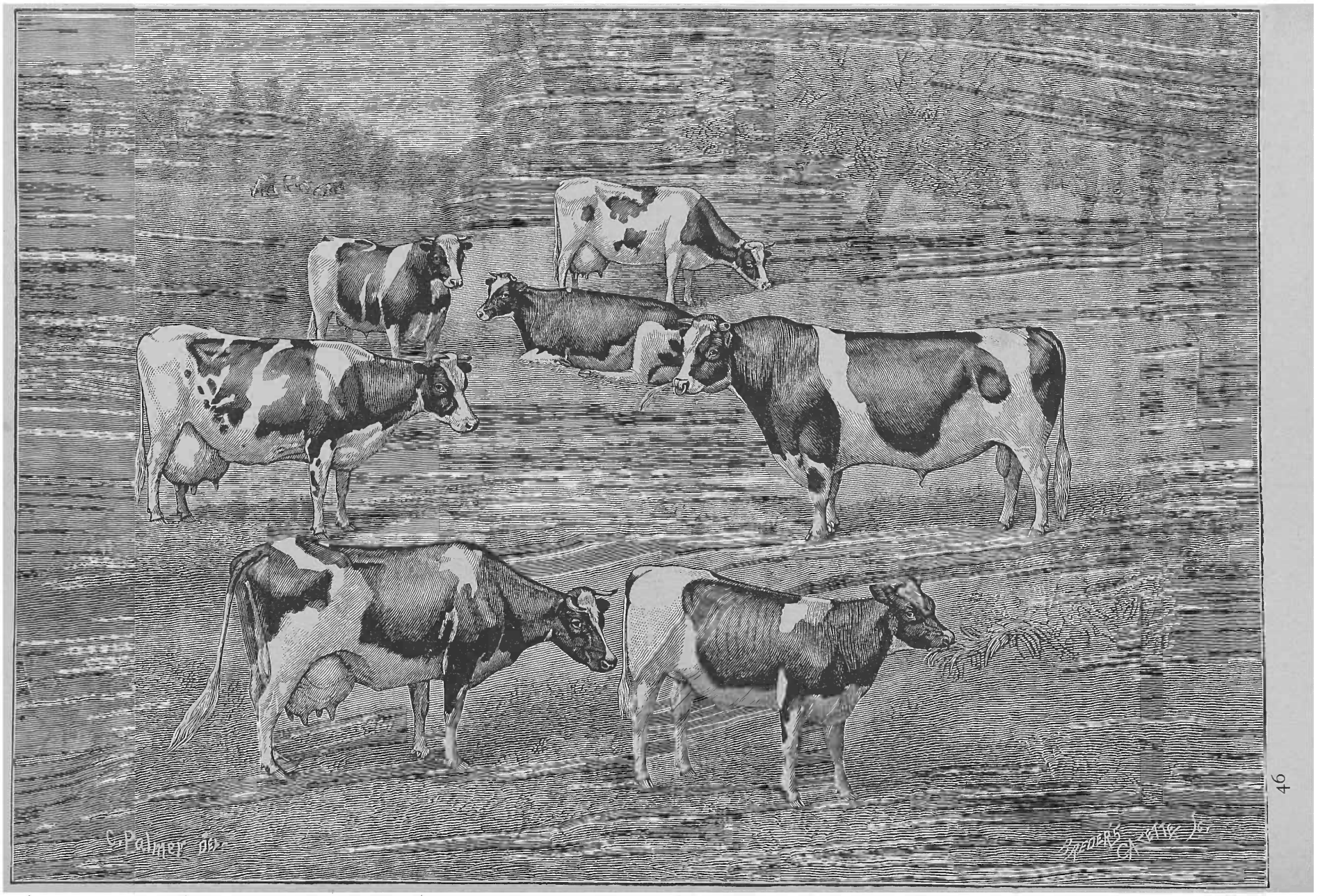
GROUP OF HOLSTEIN-FRIESIAN CATTLE OF THE AAGGIE FAMILY.

The group of select animals seen on the opposite page is made up of representatives of the famous Aaggie tribe, renowned for their wonderful milk records in the Lakeside Herd of Messrs. Smiths, Powell & Lamb, of Syracuse, N. Y.; the animals represented being Aaggie, her son Neptune, Aaggie Rosa, Aaggie Beauty, Aaggie Beauty 2d, Aaggie Kathleen, Aaggie May and calf (Horace) by Neptune. The family was first brought prominently into notice through the performances of Aaggie 901 and Lady Clifden 159 (daughters of the North Holland bull Rooker), one of these (Lady Clifden) having been the first cow of the breed known to have produced 16,275 lbs. of milk in twelve months, while the other (Aaggie) supplemented this with a test of 18,004 lbs. in a year. These were the largest tests on record at the time they were made, but later on Aaggie 2d (double granddaughter of old Rooker) gave 17,746 lbs. 2 oz. of milk in a year as a two-year-old heifer with her first calf, which record was subsequently raised as the heifer matured to 20,736 lbs. Aaggie Rosa gave 16,156 lbs. 10 oz. the first year after her importation. Aaggie Beauty yielded 13,573 lbs. 15 oz. in twelve months when just out of quarantine, and numerous other cows and heifers of the sort have performed almost equally astounding work at the pail. Sketched from life by Palmer.



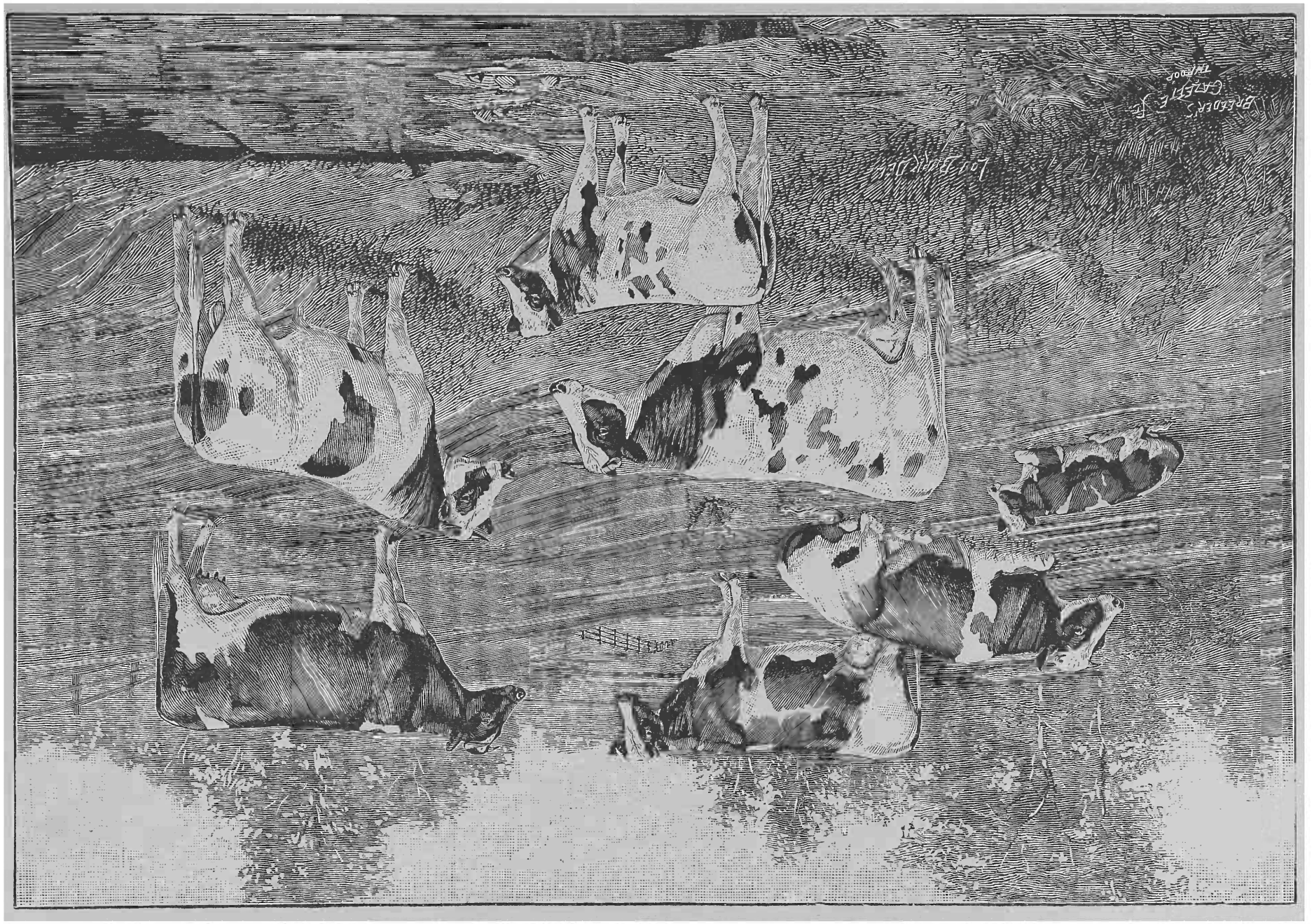
GROUP OF HOLSTEIN-FRIESIAN CATTLE OF THE VIOLET FAMILY.

Another very celebrated tribe of Holstein-Friesians are the Violets, a group of which, the property of Mr. Edgar Huidekoper, of Meadville, Pa., are shown in the beautiful engraving appearing upon the opposite page. The fine aged bull on the right is Violet Prince 4209, got by the prize bull Anton 462, out of old Violet 743, seen in left center of the cut. This cow has given 86 lbs. 12 oz. of milk in a day, and completed her six-year-old record with the remarkable yield of 18,677 lbs. 4 oz. in twelve months. While averaging 76 lbs. of milk per day she made 19 lbs. 9 oz. of butter in seven days. Violet Verbena 9388, the handsome cow in left foreground, is own sister to Violet Prince, and gave with her second calf 69½ lbs. of milk per day, making 12 lbs. 5 oz. of butter in seven days. Violet 2d 3526 (lying down in background) is a daughter of Mr. Huidekoper's well-known prize bull Billy Boelyn 189, dam Violet. Violet Belladonna 9389 by Wouter 460, out of Violet (immediately behind her) has a four-year-old record of 70½ lbs. of milk in a day and 14,504 lbs. in a year. Within ten days after calving, and then giving 40 lbs. per day, she made 15 lbs. 2 oz. of butter in seven days. The younger bull in left background, Violet King 4210, is an own brother to the cow just named, having for sire Wouter 460, he by Wouter 2d, a prize bull and sire of prize stock in Holland. The heifer in foreground is Violetta 7396, Violet's calf of 1884 by Billy Boelyn 189. Sketched from life by Palmer.



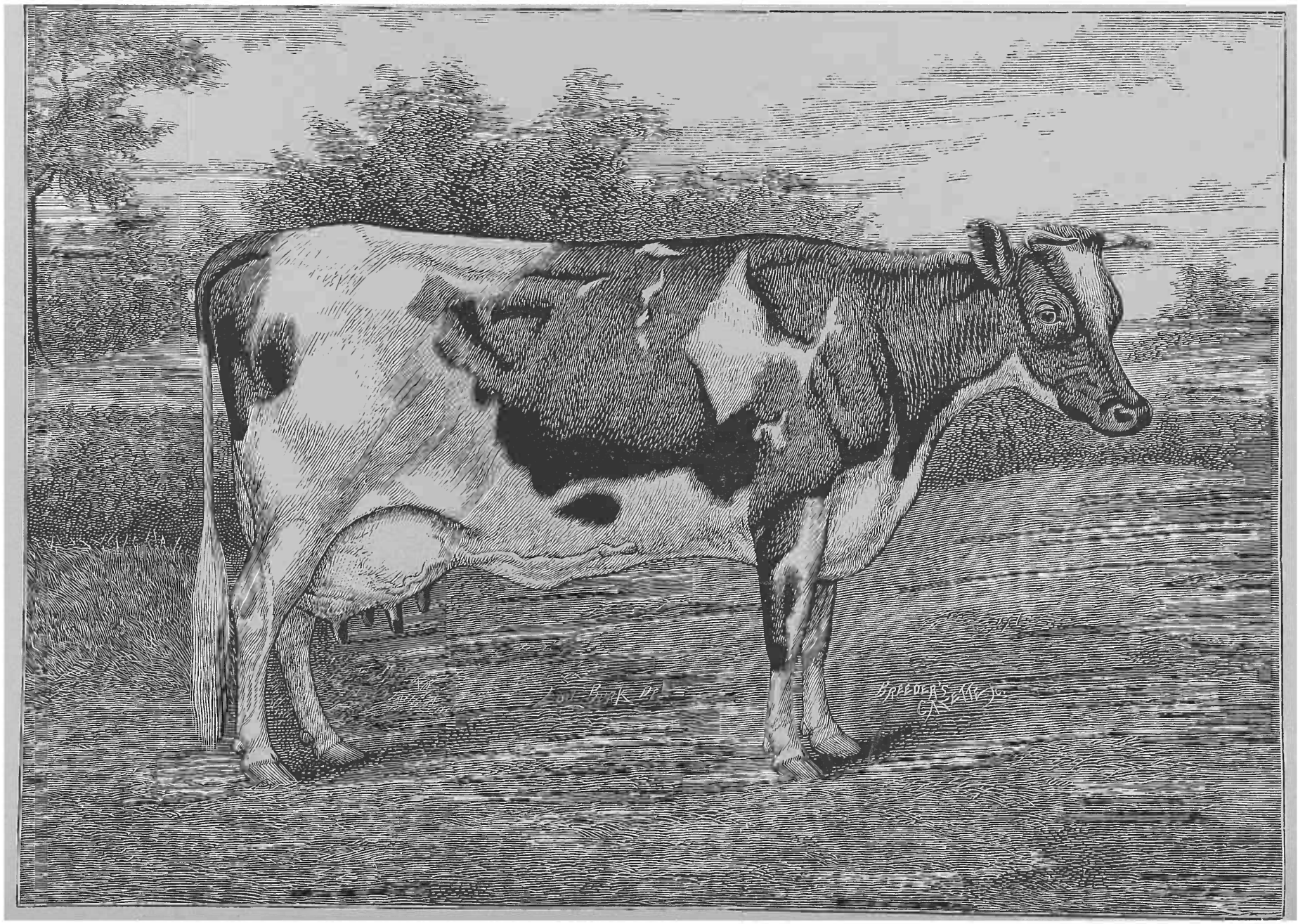
GROUP OF HOLSTEIN-FRIESIAN CATTLE OF THE NETHERLAND FAMILY.

The animals shown in the group appearing upon the opposite page represent a quartette of cows, a young bull, and two calves, descending from the famous deep-milking Netherland tribe, and belonging to the Reliance Stock Farm Herd, property of Jere Allis, of Isinours, Minn. The young bull in the right foreground is the choice "butter-bred" animal Netherland Carl 3279, bred by Messrs. Smiths, Powell & Lamb, got by Netherland Prince (716), out of Carlotta (1266), and stands at the head of Mr. Allis' herd. The cow lying on the left is Aaggie Beatrice 2d 5243, imported by Messrs. Smiths & Powell in 1883 as a calf, the heifer calf near her being her daughter Netherland Beatrice. In the middle background is the imported heifer Netherland Maid 6737, and in central foreground is seen Aaggie Lotta 4405 (imported from North Holland June, 1883) and calf Netherland Czar. The heifer on the right is Netherland Jewel 2d 3492, imported in dam, Netherland Jewel (2642), in September, 1882. Sketched from life by Burk.



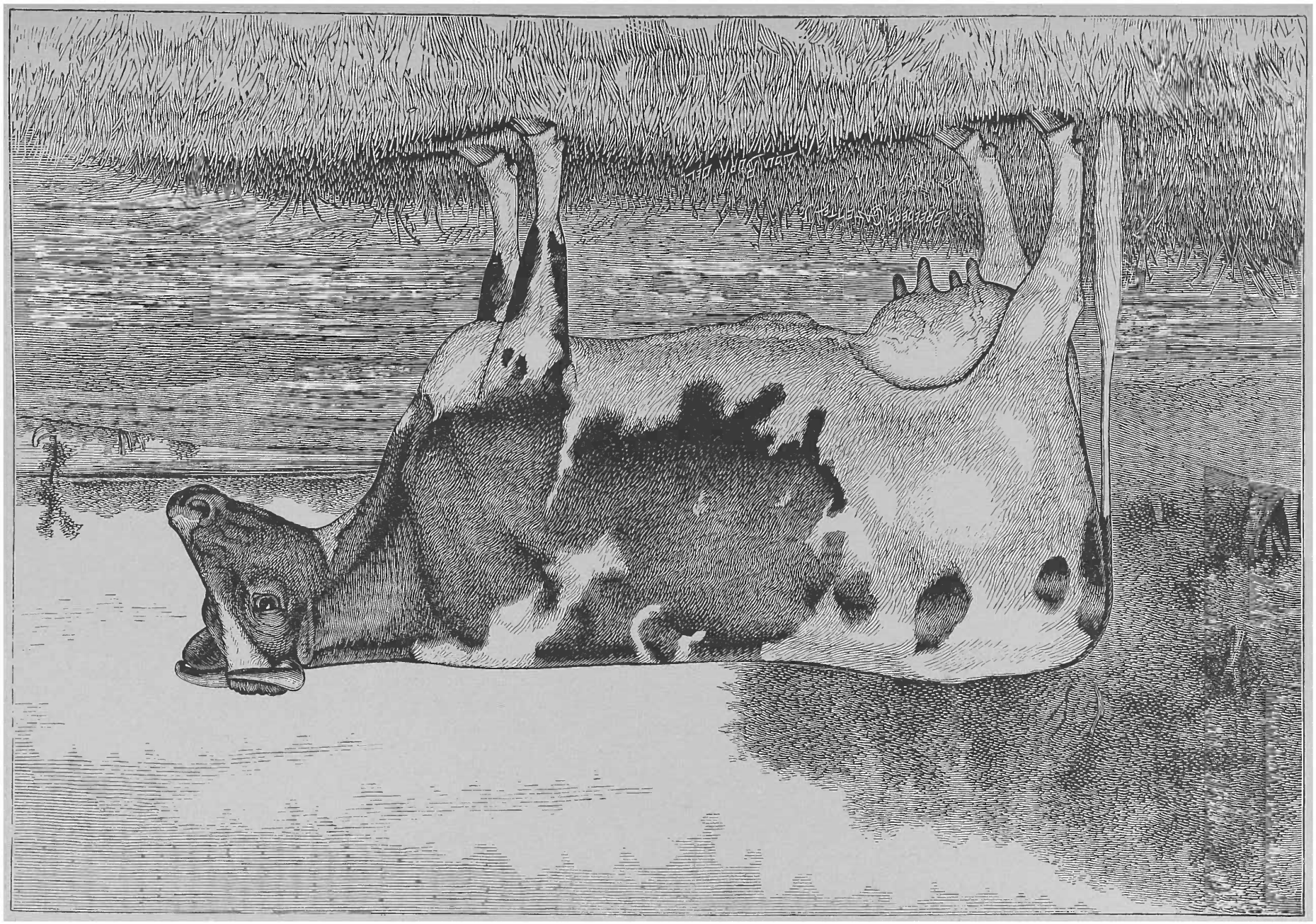
HOLSTEIN-FRIESIAN COW MERCEDES 723.

Calved March 28, 1878; bred by K. N. Kuperus, Friesland; imported September, 1879, by Thomas B. Wales, Jr., Iowa City, Ia. This cow has the distinguished honor of having won the champion cup offered by the *Breeder's Gazette* for greatest butter yield for thirty consecutive days for the year ending July 1, 1883, open to all breeds; her well-authenticated record for the thirty days commencing with May 13 and ending June 11 being 99 lbs. 6½ oz. of unsalted butter, the average yield per day being 3 lbs. 5 oz. Sketched from life by Burk, September, 1883.



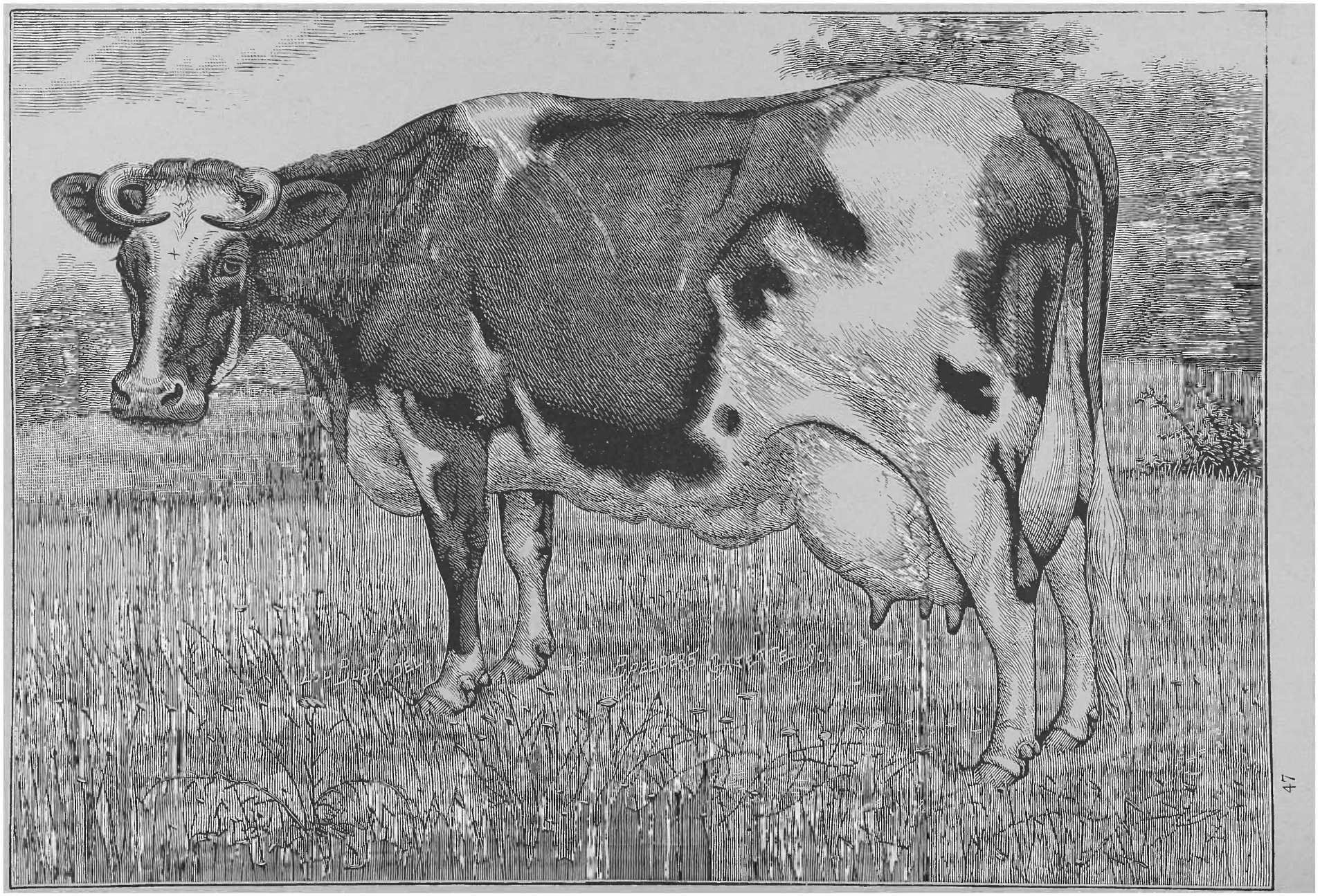
HOLSTEIN-FRIESIAN COW PRINCESS OF WAYNE 3D 1315.

Calved January, 1881; bred and owned by T. G. Yeomans & Sons, Walworth, N. Y.; got by Burly 394, dam Princess of Wayne 954. This cow in her three-year-old form made 18 lbs. 12 oz. of unsalted butter in seven consecutive days, and 76 lbs. 12½ oz. in thirty days; and her dam, Princess of Wayne, at five years old, made 22 lbs. 9 oz. of butter in seven days, and 91 lbs. ½ oz. in thirty days, and the same year gave 20,469 lbs. 9 oz. of milk. Her weight at the end of this test was 1,475 lbs. Sketched from life by Burk.



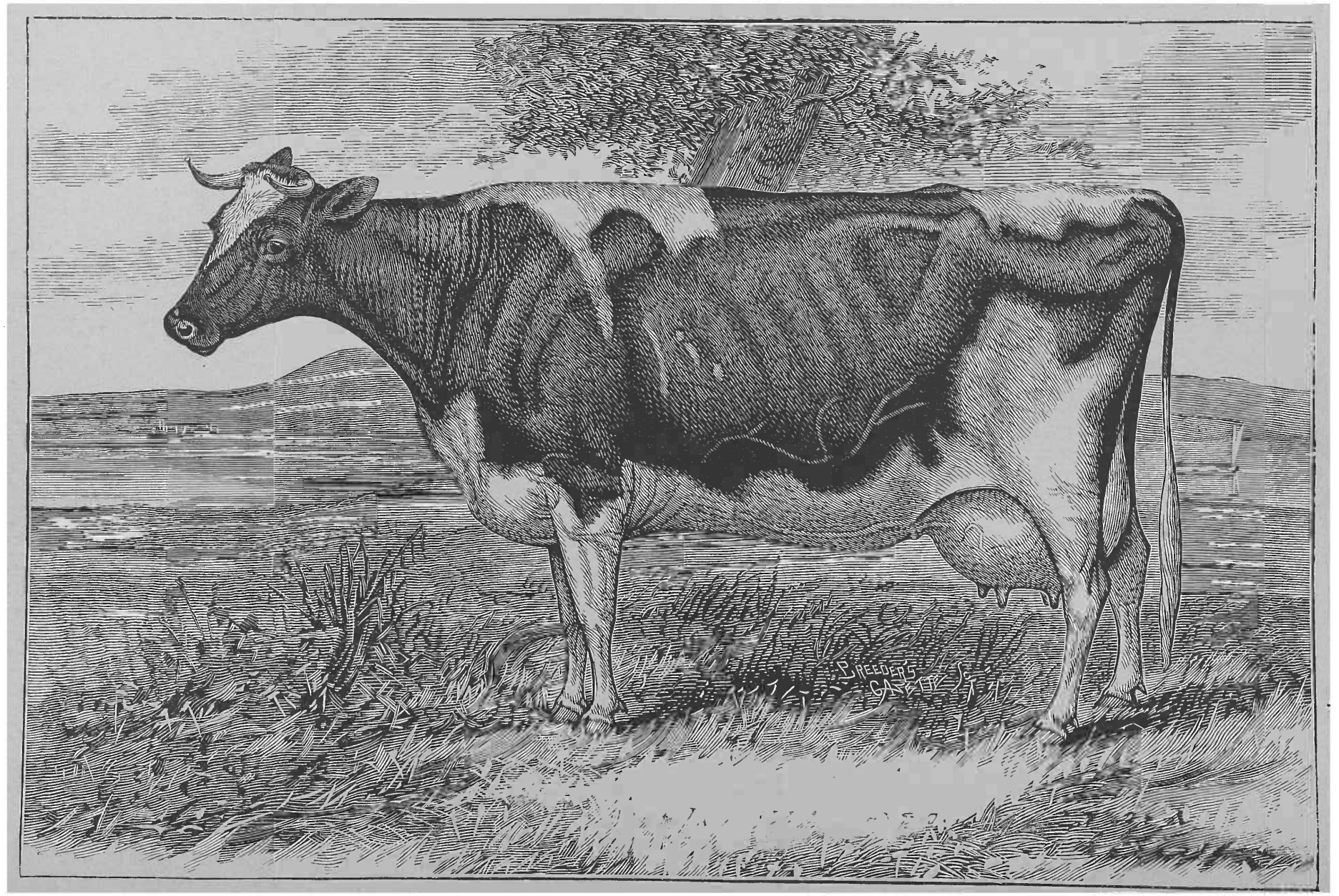
HOLSTEIN-FRIESIAN COW IMOGENE 333.

Calved 1875; bred by A. De Goede, North Holland; imported 1877 by George E. Brown, of Aurora, Ill., and soon afterward sold by him to his present owners, S. S. Mann & Son, of Elgin, Ill., in whose hands she has won an enviable reputation in the show ring, she having been a sweepstakes prize-winner at several prominent State Fairs in 1884, the only year, we believe, that she was shown. She has a milk record of 86 lbs. in one day. Sketched from life by Burk, showing her at nine years old.



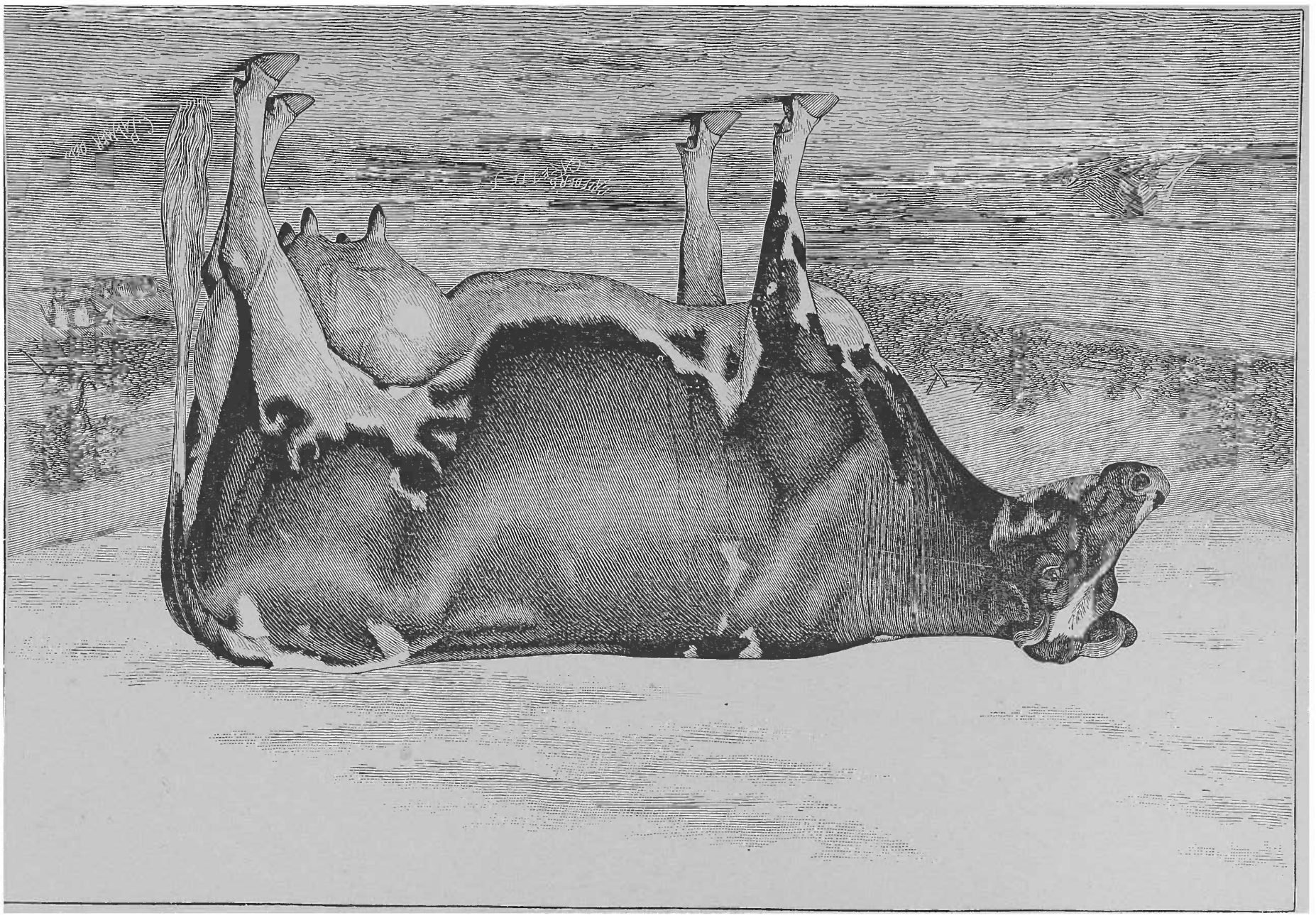
HOLSTEIN-FRIESIAN COW EMPRESS 539.

Calved May 14, 1871; bred by J. Man, North Holland; imported February, 1879, by her present owner, Gerrit S. Miller, Peterboro, N. Y., who selected her in person on account of her great milking capacity, it being represented to him that she had a record of 108 lbs. in one day. In her thirteenth year she gave 19,714 lbs. 4 oz. of milk in 365 consecutive days, the test ending April 16, 1884. Sketched from life by Page.


BREEDER'S
GAZETTE

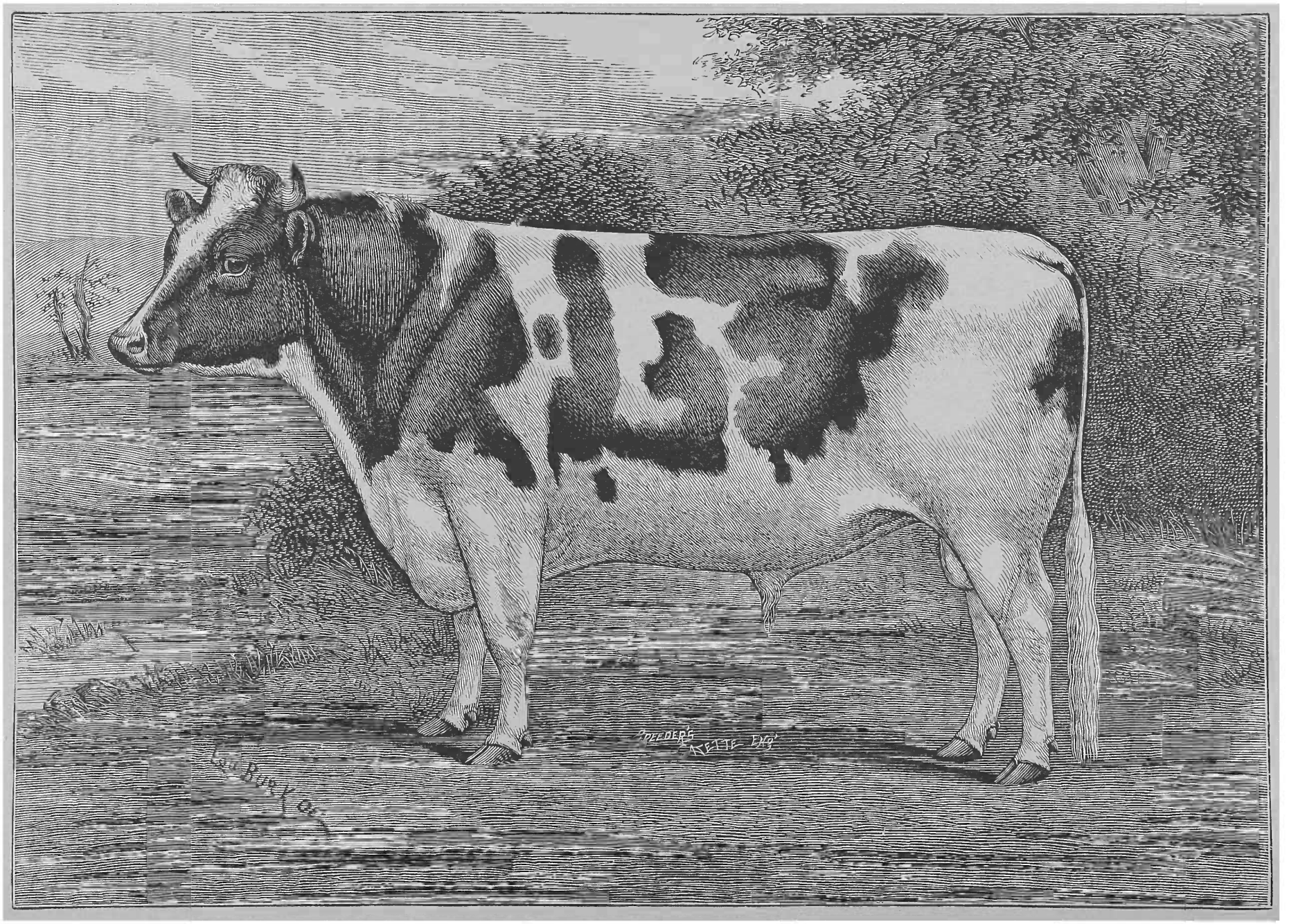
HOLSTEIN-FRIESIAN COW LADY FAY 4470.

Calved March, 1879; bred by Mr. A. C. Melchour, of North Holland; imported 1883 by her present owners, Messrs. Smiths, Powell & Lamb, Syracuse, N. Y. Lady Fay has a milk record of 97 lbs. 5 oz. in one day, and 20,412 lbs. 3 oz. in one year, and a butter record of 19 lbs. 2¼ oz. in seven days, making a pound of butter to 20.28 lbs. of milk. She has had an eminently successful show-yard career, among her triumphs being the first prize in the dairy department at the Chicago Fat-Stock Show of November, 1885. Sketched from life by Palmer.



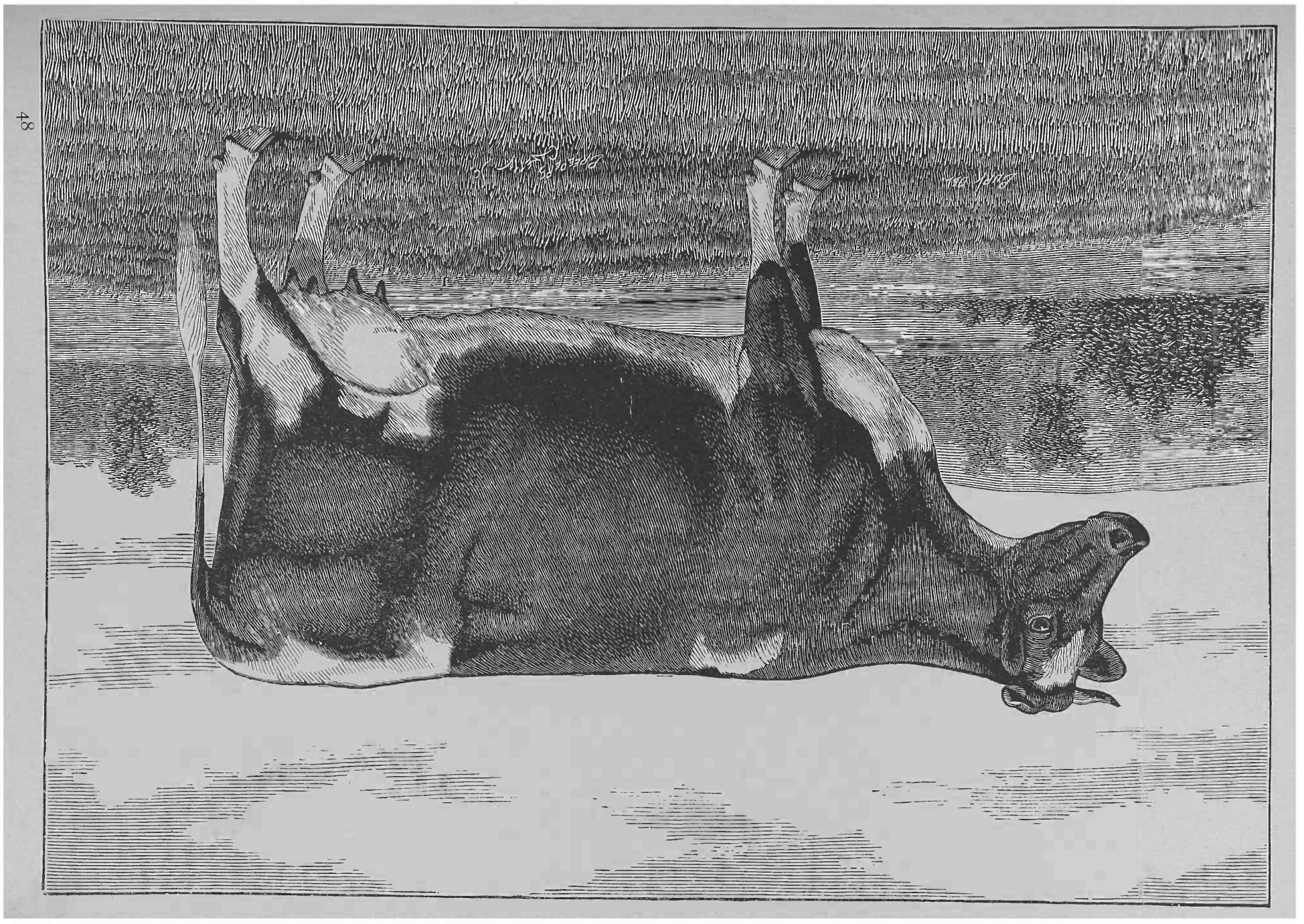
HOLSTEIN-FRIESIAN BULL ROYAL AAGGIE 3463.

Calved April 27, 1882; bred by J. Wit, of North Holland; imported October, 1883, by his present owners, T. G. Yeomans & Sons, Walworth, N. Y.; got by De Reuiter (89), dam De Schot (573). The dam of this bull has a milk record of 82⅓ lbs. in a day, and he is strongly in-bred, in both the paternal and maternal lines, to Rooker, one of the most celebrated sires of this breed. Sketched by Burk from life, showing the bull at three years old.



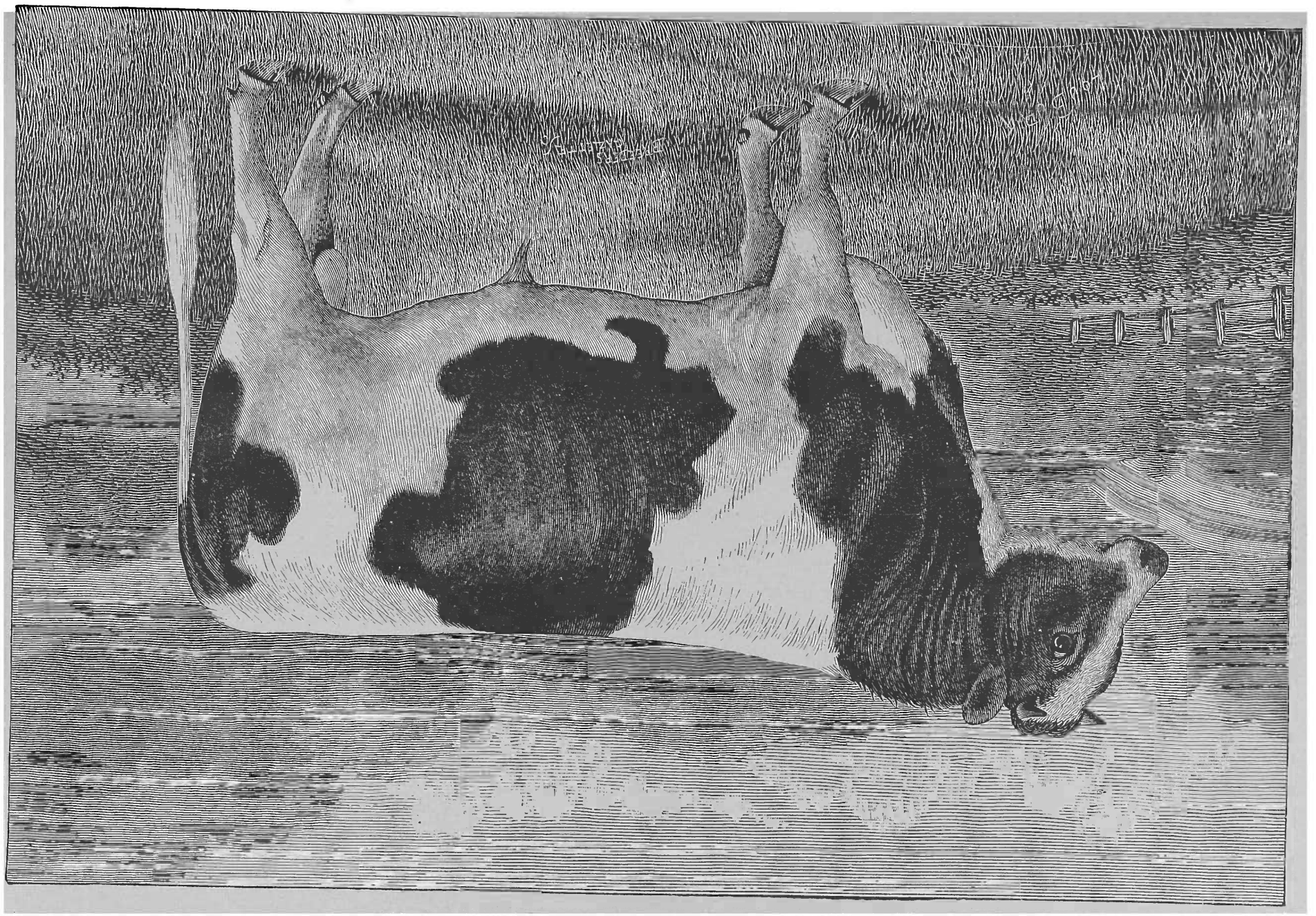
HOLSTEIN-FRIESIAN COW SUSIE CLAY 1590.

Calved May 7, 1881; bred by W. A. Russell, Lawrence, Mass.; got by Sligo 621, a bull bred by H. Swaan, of North Holland, and imported by Mr. Russell; dam Jenny Clay 341 by Dictator 82; 2d dam Lady Clay 158; imported by W. A. Russell in 1874; owned by George E. Brown & Co., Aurora, Ill. Sketched from life by Burk.



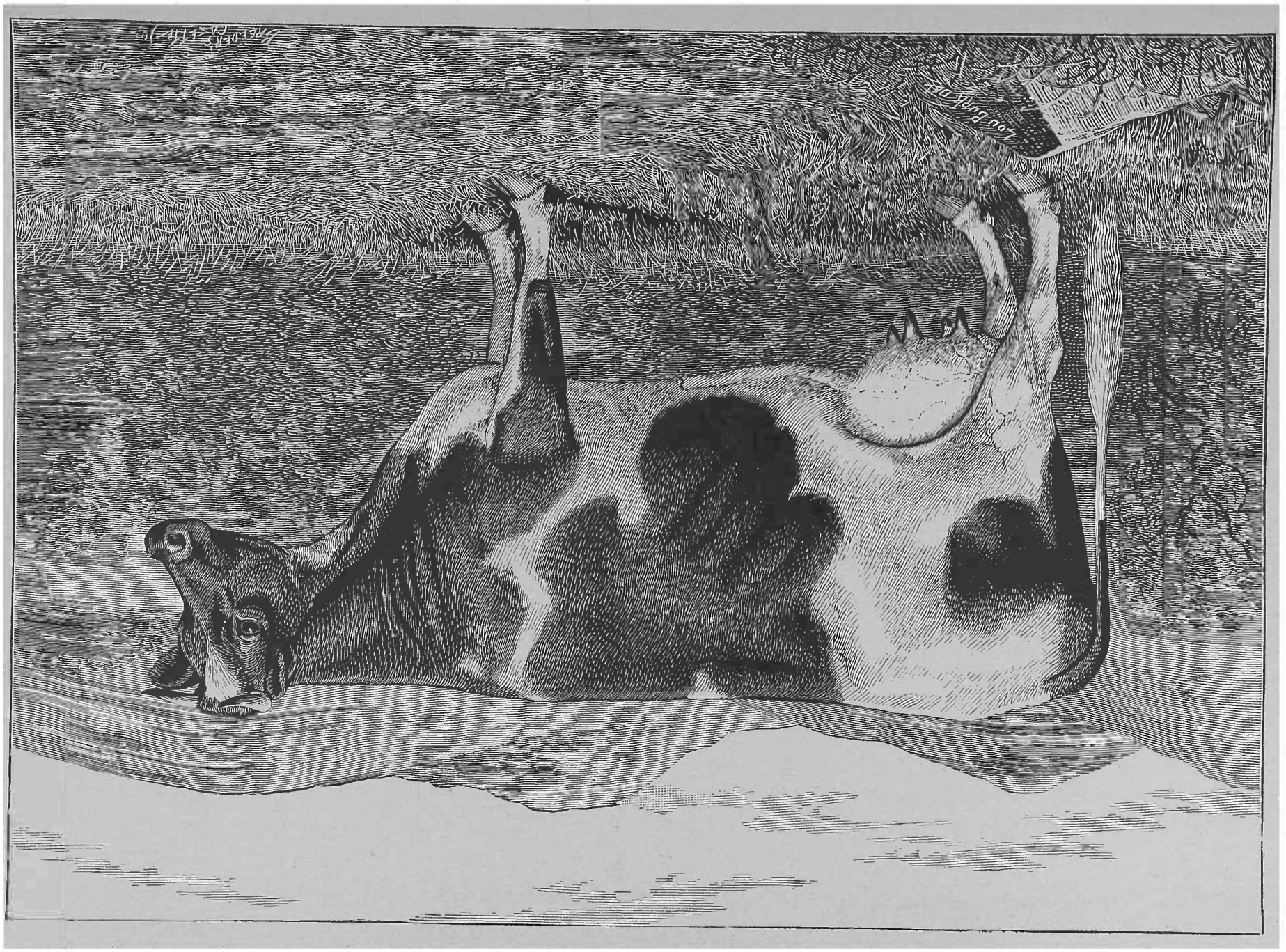
HOLSTEIN-FRIESIAN BULL MOOIE 3D 259.

Calved Aug. 28, 1883; bred by Unadilla Valley Stock-Breeders' Association, West Edmeston, N. Y.; got by Mooie 26, dam Jantine 2d 3521; owned by the Northwestern Breeders' Association, Benson, Minn., and used by them as stud bull at the head of their herd. Sketched from life by Burk.



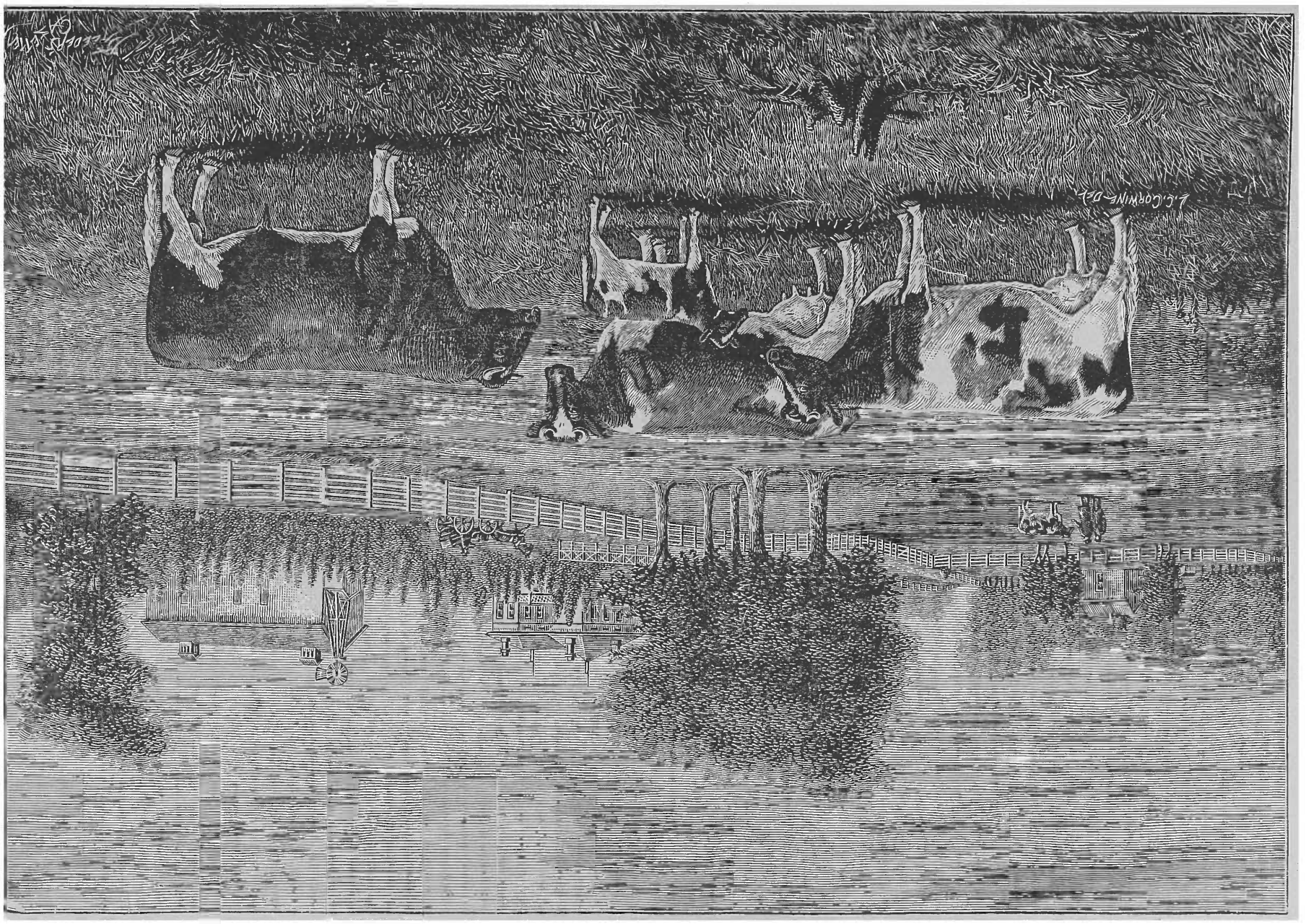
IMPORTED HOLSTEIN-FRIESIAN COW LADY OF JELSUM 1627.

Calved March, 1877; bred by Mr. E. Bonnema, of Friesland; imported May, 1881, by her owner, Thomas B. Wales, Jr., Iowa City, Ia. This cow has a milk record of 78 lbs. in one day and of 2,227 lbs. in thirty consecutive days. Sketched from life by Burk.



GROUP OF HOLSTEIN-FRIESIAN CATTLE.

The engraving which appears on the opposite page represents a group of Holstein-Friesian cattle owned by Dr. W. A. Pratt, of Elgin, Ill. The bull is Cyclone 392, bred by J. Doets, of North Holland, and imported by Gerrit S. Miller, of Peterboro, N. Y. His dam, Coronet 544, it is said, had a very large milk record in Holland. The cow in the center is Duchess of York 120, calved March, 1874; bred in North Holland and imported by J. H. Comer, of Goshen, N. Y. She was a very prominent feature in the Holstein rings at the leading Western shows of 1883, winning first prizes that year at the State Fairs of Minnesota, Wisconsin, and Illinois. She has a milk record of 841 lbs. in ten days, and 87½ lbs. in one day. The other cow is Galaxy 2d 310, calved August, 1877; got by Bleecker 3, out of Texelaar 12th 59. The calf is by Cyclone 392, out of Countess of Flanders. Engraved after a sketch from life by Corwine.



CHAPTER XVI.

JERSEY, GUERNSEY, AND ALDERNEY CATTLE.

Jersey, Guernsey, and Alderney are the names of three islands situated in the English Channel off the coast of France, and which, with a few smaller ones, form the group known as the Channel Islands. The cattle on these islands are similar in most respects, and have been known under the general appellation of Channel Islands cattle, although when first introduced into this country they were all called Alderneys. In fact by this generic name all the Channel Islands cattle were designated until within a comparatively recent period, both in this country and in England. They are all more or less distinguished for their dairy product. But while this is their general characteristic, the cattle of each of the islands named are kept distinct, and no crossing is permitted. Neither are live cattle from any other country permitted to be brought into any of these islands, the local authorities having as early as 1763 passed very severe laws against the importation of cattle other than for immediate slaughter for beef. The cattle of the Island of Jersey and those of Alderney resemble each other more closely perhaps than those of Jersey and Guernsey, but in fact the points of difference between the cattle of all these islands are so slight that they might with great propriety all be classed as a single breed. As

with all others of the more ancient and well-established breeds of cattle the remote origin of the Channel Islands cattle is unknown; but there can be no question that they are all descended from substantially the same stock—that of the adjacent French provinces of Normandy and Brittany in France. Having been bred without intermixture from outside sources, and constantly with reference to the quantity and quality of their butter product for at least one hundred and fifty years, it is no wonder that they have come to be generally regarded as the butter cow *par excellence* of the world —certainly greatly superior to the French breeds from which they are believed to have descended. It is not so much for the quantity of the milk yield that these cattle are famed as for its peculiar richness in cream and in the quantity of rich, finely-flavored, golden-colored butter that it produces.

The Jerseys are the most numerous, as Jersey is much the largest island of the group—larger, indeed, than all the others combined. The Guernsey cattle are larger, and perhaps coarser than the Jerseys; and it is claimed that while they are equally as desirable as the latter with regard to the quantity and quality of the cream and milk, they fatten off more readily and are more valuable for beef. On this account it is urged that they are better than the cattle of Jersey and Alderney for the general farmer for dairy purposes or for crossing upon other stock. On the other hand, the breeders of Jersey cattle claim superiority for this breed over all others in the quality of the milk and cream, and in the purity of the breed. The cattle of Alderney are, as a class, smaller and more delicate than those of Jersey and Guernsey, and but very few of them have been brought to America.

Mr. James P. Swain says: "I consider the cows on the Island of Jersey, Norman mixed with another distinct breed, the main characteristics of each being still plainly visible, though growing less so yearly. The original, or highest type, I call the wild Jersey; the other type I consider Norman or Guernsey. The wild Jersey has a black nose, black tongue, and mealy muzzle; the other a buff nose. The wild Jersey's horns are black, pointed, firm, with single curve, forming nearly a semicircle, deeply fluted inside when taken off. The other has weak horns, shelly, yellow, waxy near the head, inclined downward, with double curve, compacted, smooth inside when taken off. The color of the female wild Jersey is chocolate, or mink color, no white spots, and the males nearly black. The others are yellowish, brown-and-white, star in forehead. The wild Jersey's skin is olive brown; the other, skin very yellow, even to the end of the tail. In the wild Jersey the tail terminates in a small tuft of long hairs, the skin near the end scaly with the accumulation of coloring matter. The other, skin on tail very yellow, even to the end, where there is an accumulation of coloring matter, which the Guernsey men call 'a lump of butter'; the long hair on the tail starts higher up."

The importation of cattle from these islands (mainly from the Island of Jersey) to the United States began about thirty-five years ago, and the demand which followed their early importation has grown constantly and rapidly until it is believed that a majority of the most desirable representatives of the breed have been brought to this country. But it is also true that this demand has had a powerful effect upon Jersey breeders on the island and has stimulated them to an earnest effort for improvement in the breed at

home, and a herd book was started on the island in 1866. Two years later the American Jersey Cattle Club was organized at Philadelphia with about forty members, and this Club has since grown to be perhaps the most active, influential and wealthy organization of the kind in the world. It has guarded the purity of the breed with the greatest care, has surrounded the registration of cattle in its Herd Book with every safeguard that ingenuity and experience could suggest to prevent fraud and imposition upon the public, and has been from its organization a powerful factor in popularizing the breed in America. Twenty-one volumes of its Herd Book have been issued. Mr. T. J. Hand, of New York city, is Secretary of the Club. Neither Guernsey nor Alderney cattle are admitted to registry by this Club.

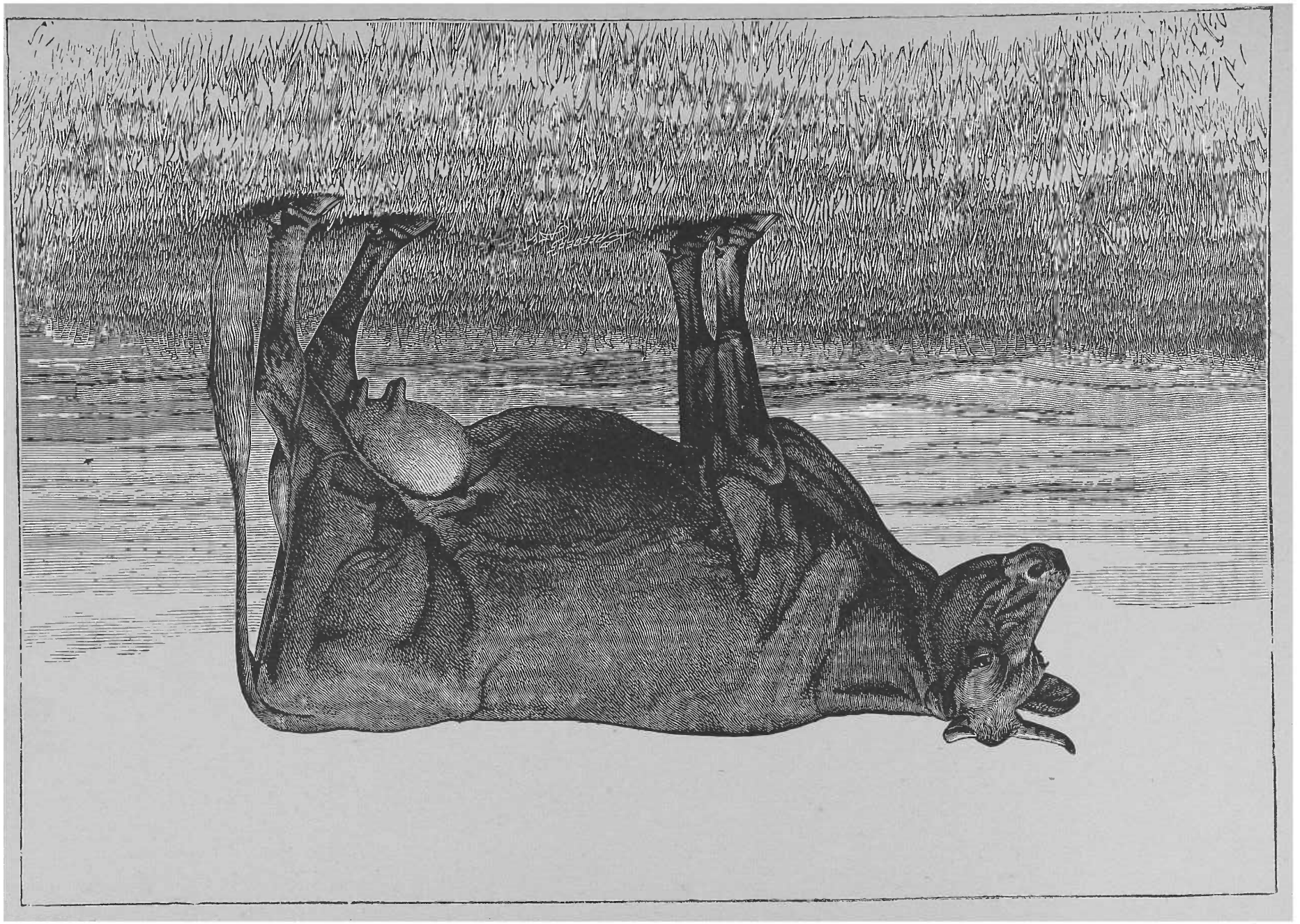
Jerseys may be classed as among the small breeds, but the tendency of American breeders is toward greater size than that usually found on the island. The bone is fine, and they usually carry but little flesh. In color there is some variation, but the Jersey calf is almost always light or dark fawn colored, sometimes with white markings; but solid color is preferred by Jersey breeders generally. The fawn color of the calf frequently changes with its second growth of hair, so that the "body color" varies in different animals from a light fawn to a squirrel gray and light and dark brown. Black tongues, noses and switches are preferred by Jersey fanciers generally. The illustrations which follow show the variations in color very clearly, and the descriptive matter in connection therewith sets forth the wonderful capacity of the best specimens of the breed as butter producers in such a striking manner as to almost stagger belief; but all the tests given in connection with the illustra-

tions are thoroughly well authenticated. A book entitled "Butter Tests of Jersey Cows," compiled and published by Major Campbell Brown, Thomas H. Malone, and M. M. Gardner, of Tennessee, and issued early in 1884, contains the names of nearly four hundred and fifty Jersey cows owned in the United States and Canada that had what were considered well-authenticated tests of 14 lbs. of butter or over in seven consecutive days; and to this work, as well as to the introductory matter in the early volumes of the Jersey Herd Register, the reader is referred for further information concerning the breed.

Guernsey cattle have not been anything like so extensively introduced into this country as the Jerseys, and those who have imported and bred them have been rather modest in placing their merits before the public. As previously stated, they are usually rather larger than the Jerseys, are coarser boned, less angular in outline, carry rather more flesh, and are not so dark colored, the light fawn and yellowish shades predominating, instead of the darker tints as in the Jerseys. In common with the Jersey, however, the butter-producing quality is wonderfully developed, and it is claimed by their partisans that the natural yellow coloring matter is more abundant in the cream of the Guernsey cow than in that of any other of the Channel Islands cattle. A herd book has been in existence on the island for several years; and the American Guernsey Cattle Club, of which Mr. Edward Norton, of Farmington, Conn., is Secretary, although of recent origin, numbered at its last annual meeting (December, 1885) eighty-nine members, and reported a total registration of 3,887 purely-bred Guernsey cattle.

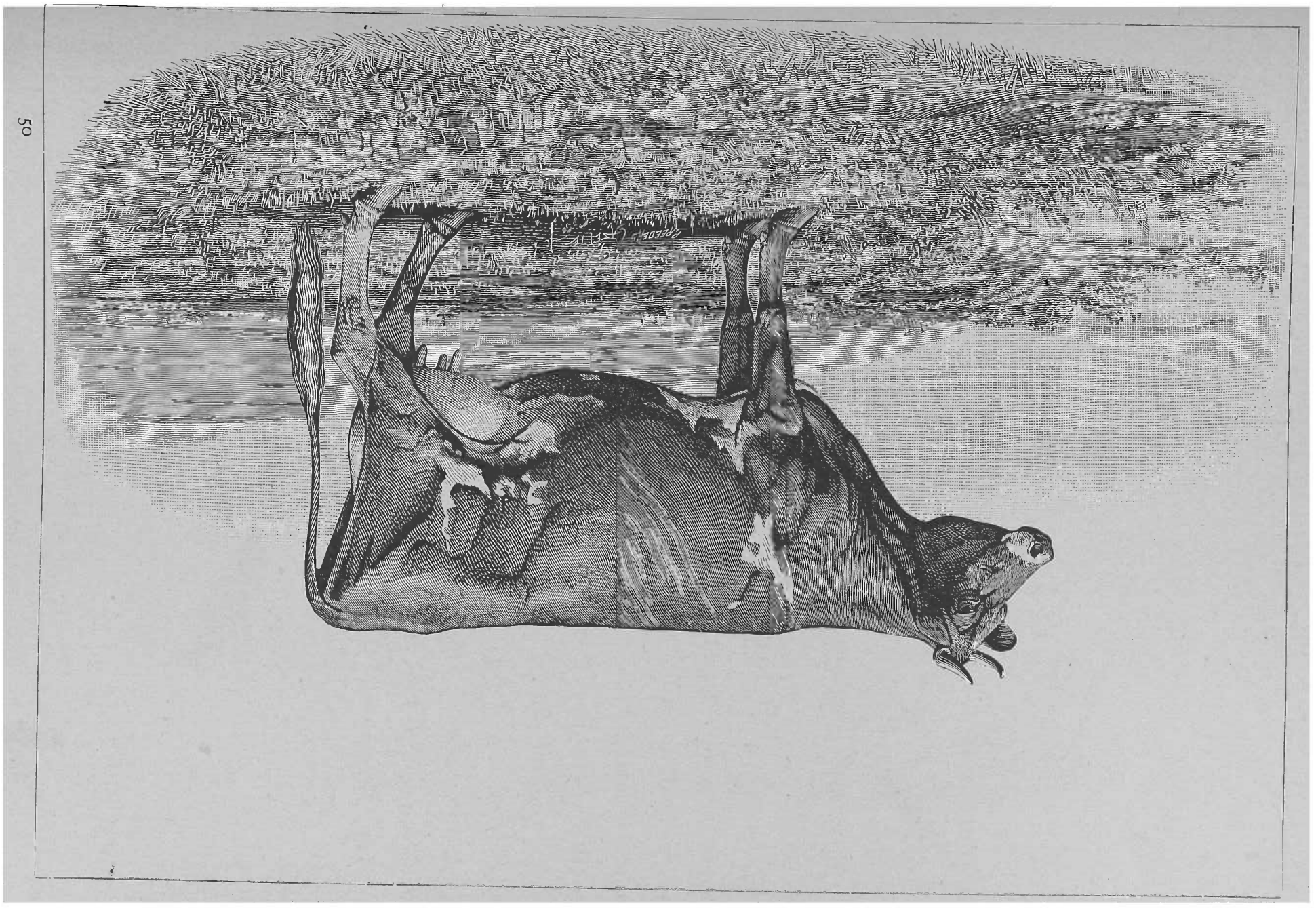
JERSEY COW PRINCESS 2D 8046.

The record of 44 lbs. 1½ oz. of unsalted butter within seven consecutive days made by Princess 2d, beginning Feb. 22 and ending with March 1, 1885, is so much beyond what had previously been supposed to be the highest capacity of even the very best Jersey cows that the statement would scarcely be credited anywhere were it not that the test was conducted under such circumstances and is so well attested in every particular as to leave no room to doubt its correctness. Mr. J. Henry Gest, of Cincinnati, O., was appointed by the Jersey Cattle Club to supervise the test in all its details, and his official report was published in the *Breeder's Gazette* of March 19, 1885, page 428, giving the exact weight of milk and of butter produced for each day of the test, together with a detailed statement of the food consumed. The total yield of milk during this period of seven days was 299½ lbs., the highest yield per day being 44½ lbs. and the lowest 40 lbs., the average during the test being 1 lb. of butter to 6.4 lbs. of milk. This wonderful cow was calved Feb. 22, 1877; bred by A. Le Gallais on the Island of Jersey, and imported in 1879; owned at the time of test by Mrs. S. M. Shoemaker, Baltimore, Md. She was got by Khedive (P. S. 103), out of Princess (F. S. 1294), making her what is known in Jersey breeding circles as a Coomassie-Welcome cow. Color, light fawn with some white on the belly; weight in very moderate flesh, 1,125 lbs. Engraved from a photograph from life.



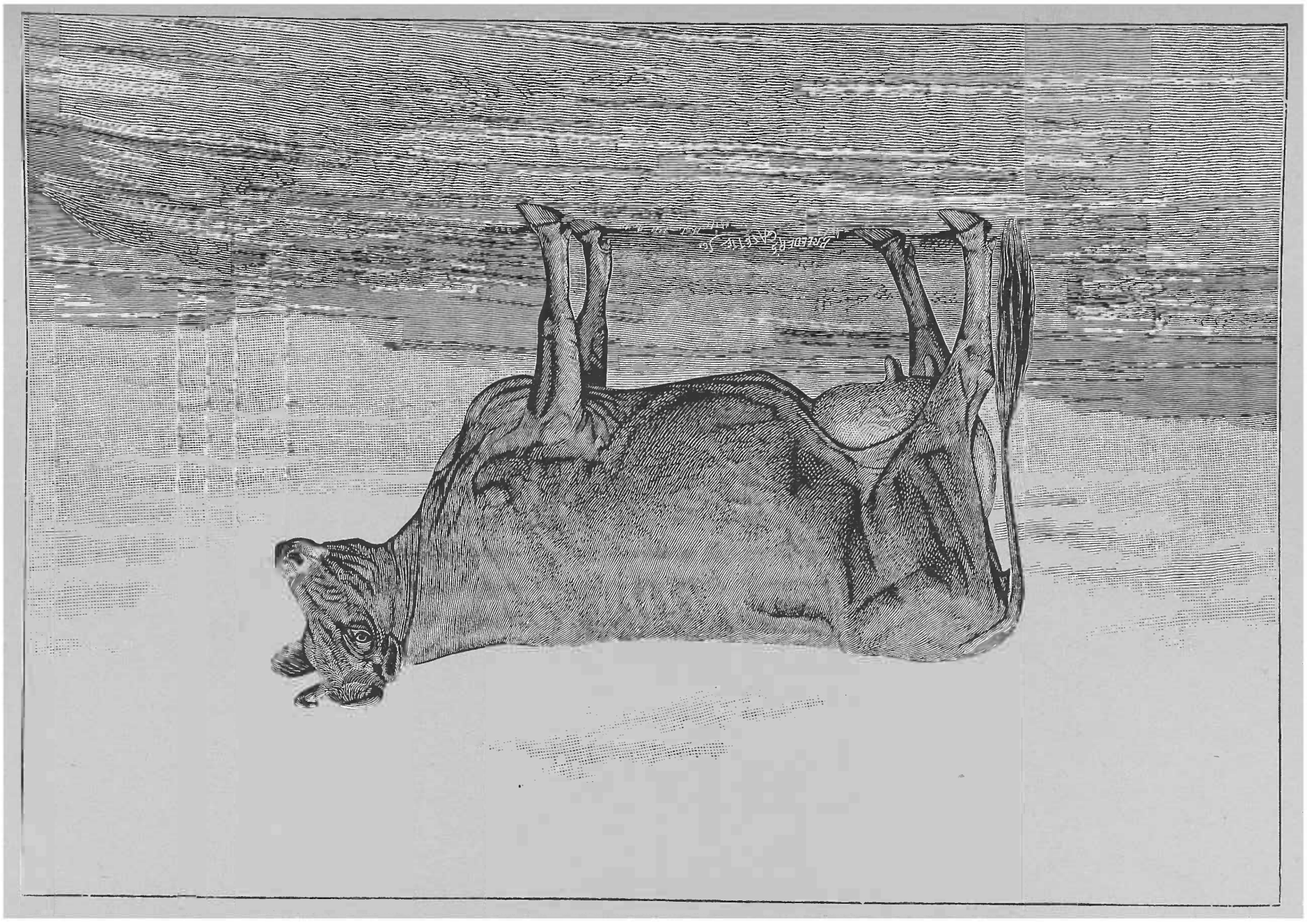
JERSEY COW OXFORD'S KATE 13646.

Next in rank to Princess 2d (illustrated on the preceding page), by virtue of the seven days' butter record, is Oxford's Kate, shown on the page facing herewith. Her great test, conducted with the strictest care and accuracy by Mr. Andrew Banks, acting under official orders from the Jersey Cattle Club, commencing April 1 and ending April 8, 1885, showed a total yield of 248½ lbs. of milk, which produced 38 lbs. 2 oz. of unsalted butter. The official report of this test, showing the exact amount and kinds of food consumed, with the weights of milk and butter for each day, and the methods employed to insure accuracy and prèvent fraud, will be found on page 589 of the *Breeder's Gazette* for April 16, 1885. This cow was bred on the Island of Jersey; calved Feb. 20, 1879; got by Pilot (P. S. 183) out of Verclut (F. S. 1846); color, light brown, with white markings. Owned at time of test by Mrs. S. M. Shoemaker, Baltimore, Md. Engraved from a photograph from life.



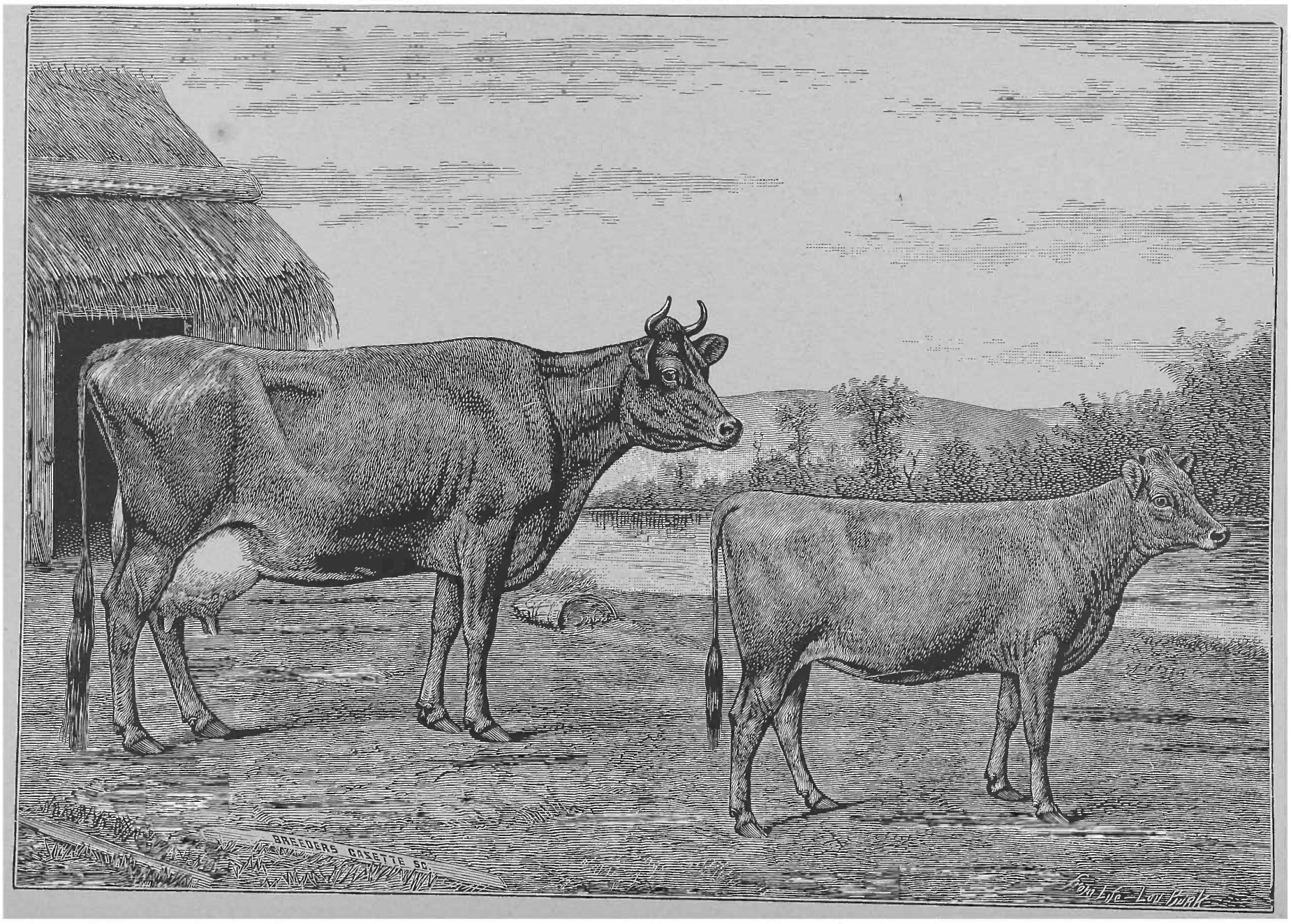
JERSEY COW MARY ANNE OF ST. LAMBERT 9770.

Third in rank, by virtue of the seven days' butter test, and for a long time at the head of the list, is Mary Anne of St. Lambert, calved March 26, 1879; bred by R. H. Stephens; got by Stoke Pogis 3d 2238, dam Dolly of St. Lambert 5480. Solid color; weight, in light flesh, 1,050 lbs. Tested Sept. 23 to 30, 1884, seven days, under the supervision of a committee appointed by the American Jersey Cattle Club, and showed a yield of 245 lbs. of milk, from which was made 35 lbs. 8¾ oz. of unsalted butter, being about 1 lb. of butter to 7 lbs. of milk. The official report of this test, with very full details as to feeding, etc., was published in the *Breeder's Gazette* of Oct. 16, 1884, page 570. This cow was the principal competitor with the Holstein cow Mercedes in the contest for the challenge cup in 1883 [see page 364], her test for this cup for thirty days, commencing May 29, 1883, having resulted in a total yield of 1,138 lbs. of milk and 97 lbs. 8½ oz. of unsalted butter. In a test of 248 consecutive days, ending Jan. 31, 1884, her total yield of butter, salted one ounce to the pound and thoroughly worked, was 720 lbs. ¾ oz., verified by affidavits of reliable parties. This remarkable cow was owned by Valancey E. Fuller, of Hamilton, Ont., in whose hands several other members of the St. Lambert family of Jerseys have made remarkable records. Engraving made from a photograph from life.



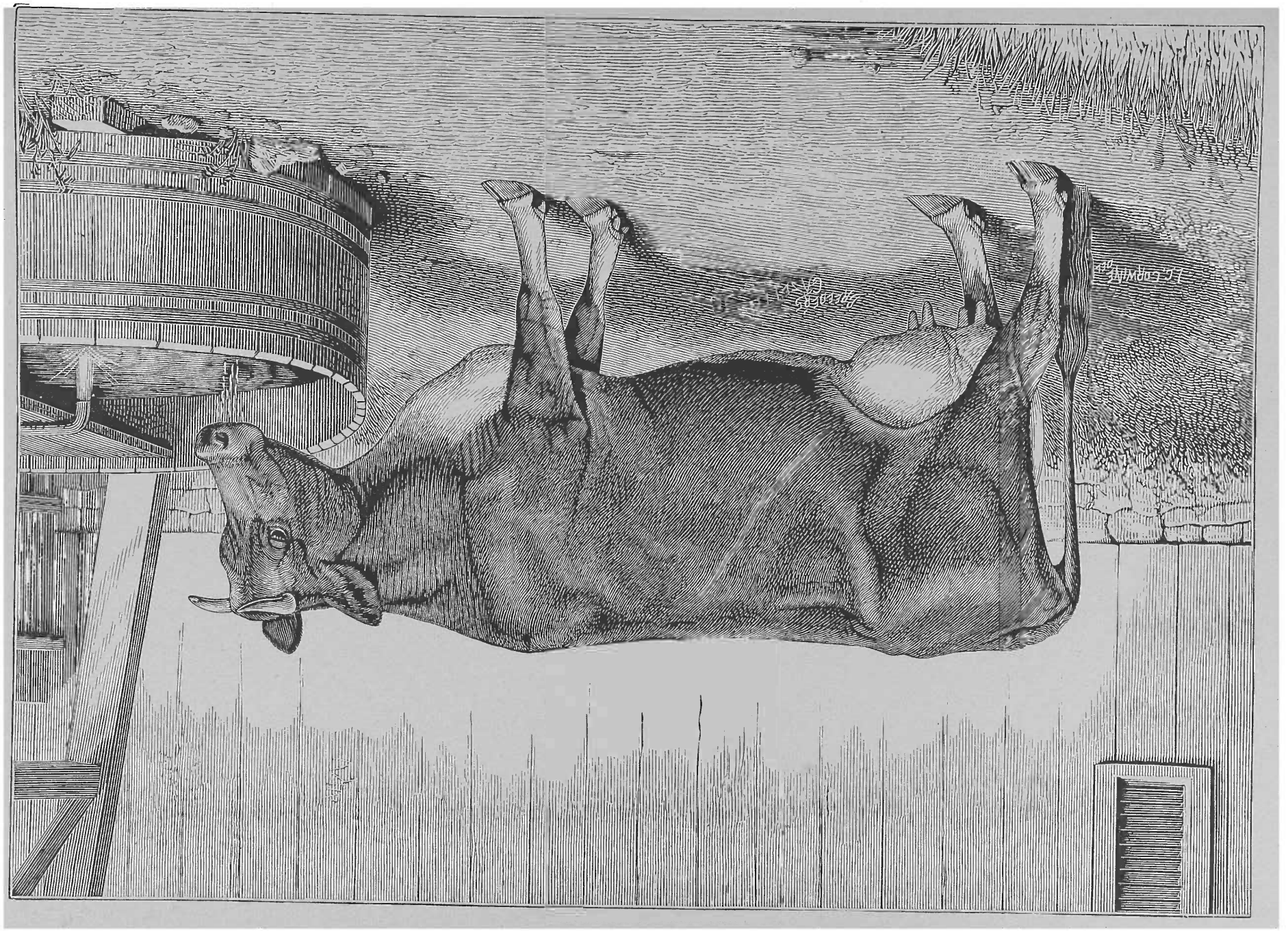
JERSEY COW NANCY LEE 7618 AND CALF NANCY LEE 2D.

Calved April 17, 1876; bred by John Le Mottée, Island of Jersey; imported September, 1878, by E. P. P. Fowler; solid color, black switch; got by Claimant (P. S. 84), dam Nonpareil (F. S. 1248); owned by C. Easthope, Niles, O. This cow has a milk record of 2,816 quarts in nine months as a two-year-old, and tested by Mr. Easthope, her yield, as verified by affidavit, was for thirty-one consecutive days 1,430 lbs. 3 oz., from which 95 lbs. 3½ oz. of unsalted butter was made. Her highest daily yield during this test was 53 lbs. 8 oz., from which 4 lbs. 2½ oz. of unsalted butter was made; and in seven consecutive days of this period she gave 360 lbs. 12 oz. of milk, which made 26 lbs. 8½ oz. of unsalted butter. Her food during this test was two quarts of corn-meal and three quarts of bran twice daily. Sketched from life by Burk.


BREEDERS GAZETTE CO.

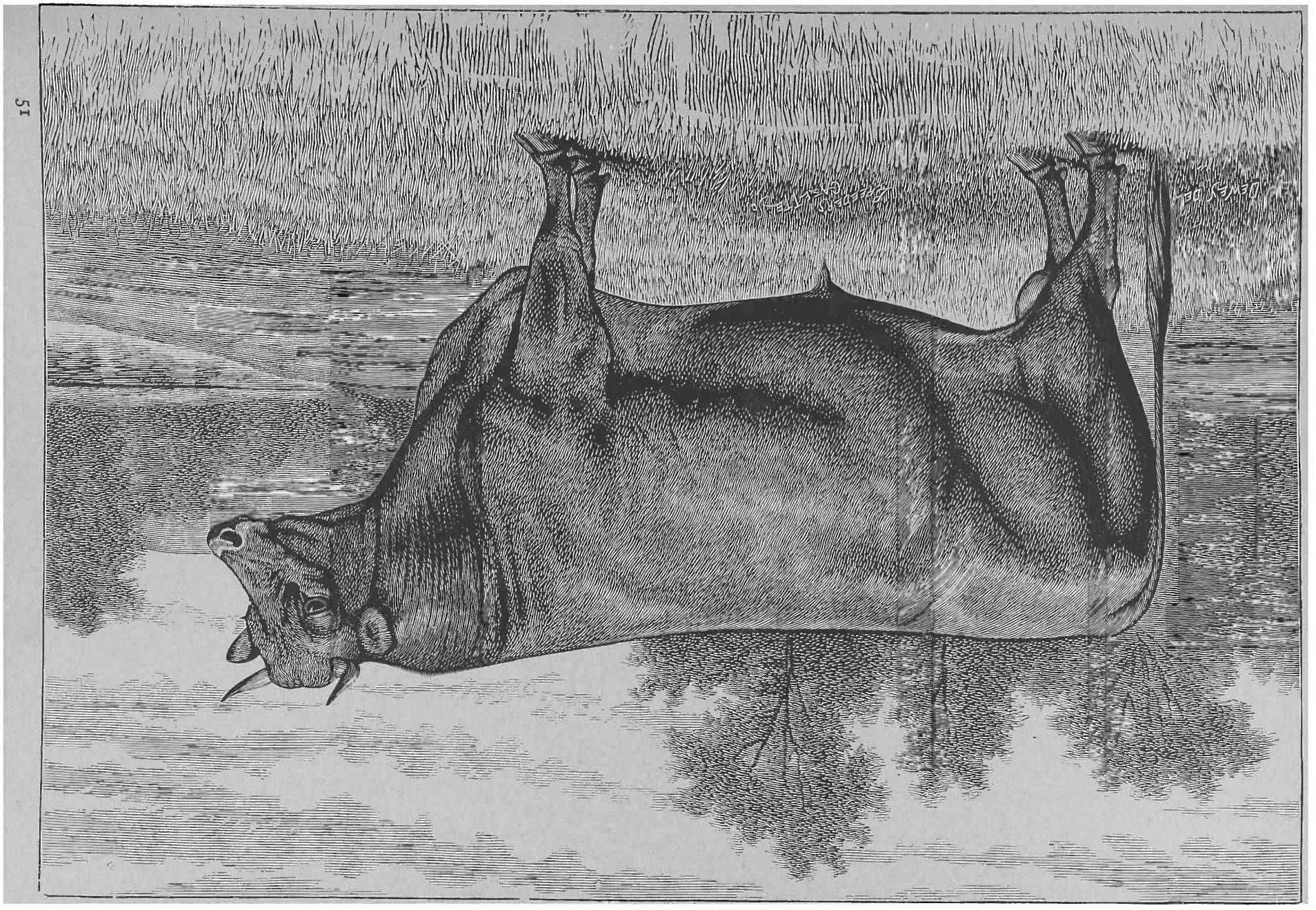
JERSEY COW BELMEDA 6229.

Calved March 30, 1877; bred by S. W. Sterrett, Carlisle, Pa.; got by Superb 1956, son of Pierrot 2d 1669, dam Orphean 4636 by Hurd's Ivanhoe 1522. This cow was tested seven days, April 3 to 9, 1883, and yielded 202 lbs. 12 oz. of milk, from which 18 lbs. 12 oz. of butter was made, salted one ounce to the pound and worked dry. Solid color, with black switch. Owned at time of test by G. R. Dykeman, Shippensburg, Pa. Sketched from life by Corwine.



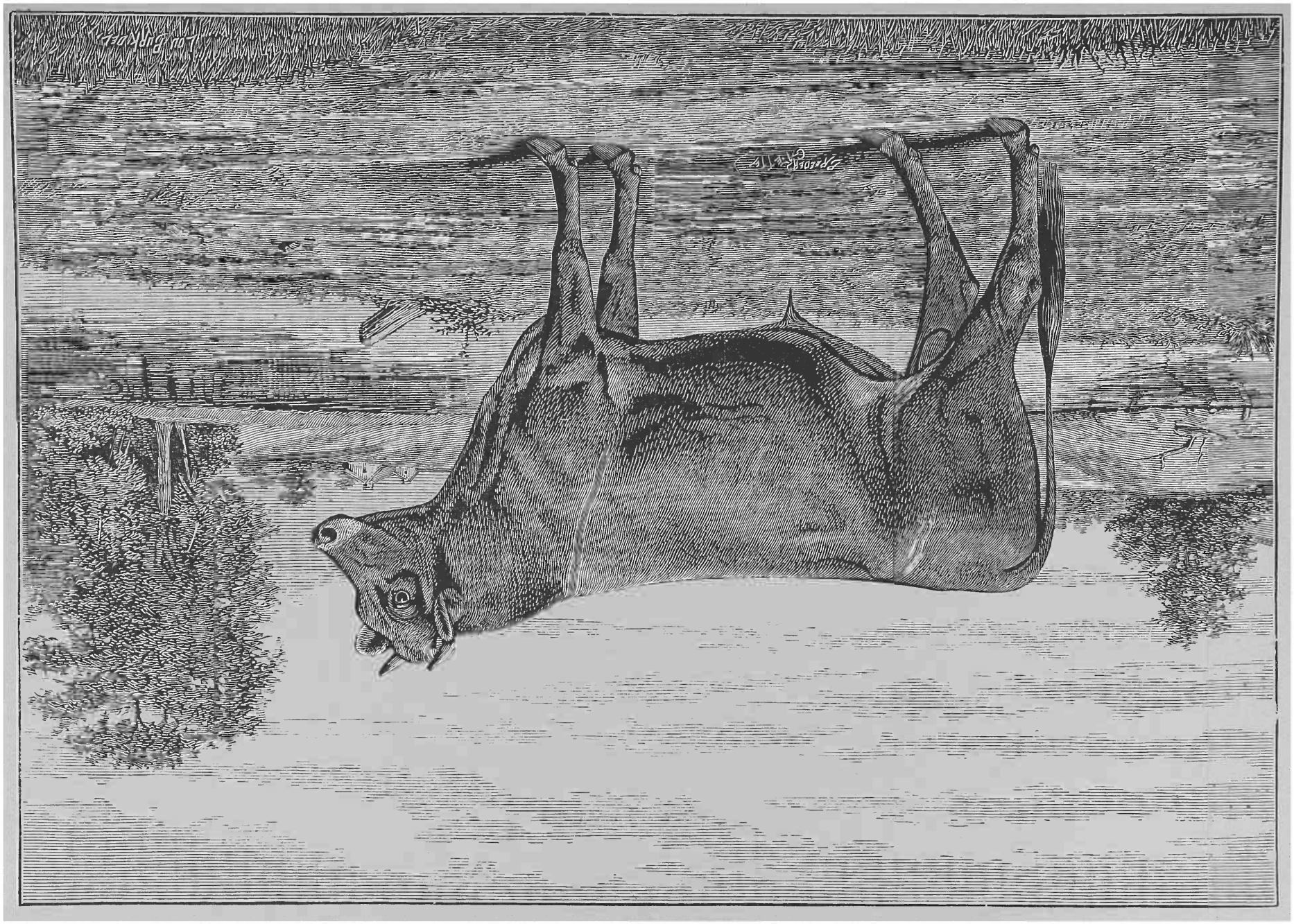
JERSEY BULL ROYALIST 3D 4500.

Calved Dec. 13, 1878; bred by Samuel Stratton; got by Royalist 2906 [son of Duke (76), out of Regina 32, seven days' test of 20¼ lbs.]; his dam, Nelly 6456, a cow with a test of 21 lbs. of butter in seven days. Solid color; owned by Col. Charles F. Mills, Springfield, Ill. Engraved after a sketch from life by Dewey.



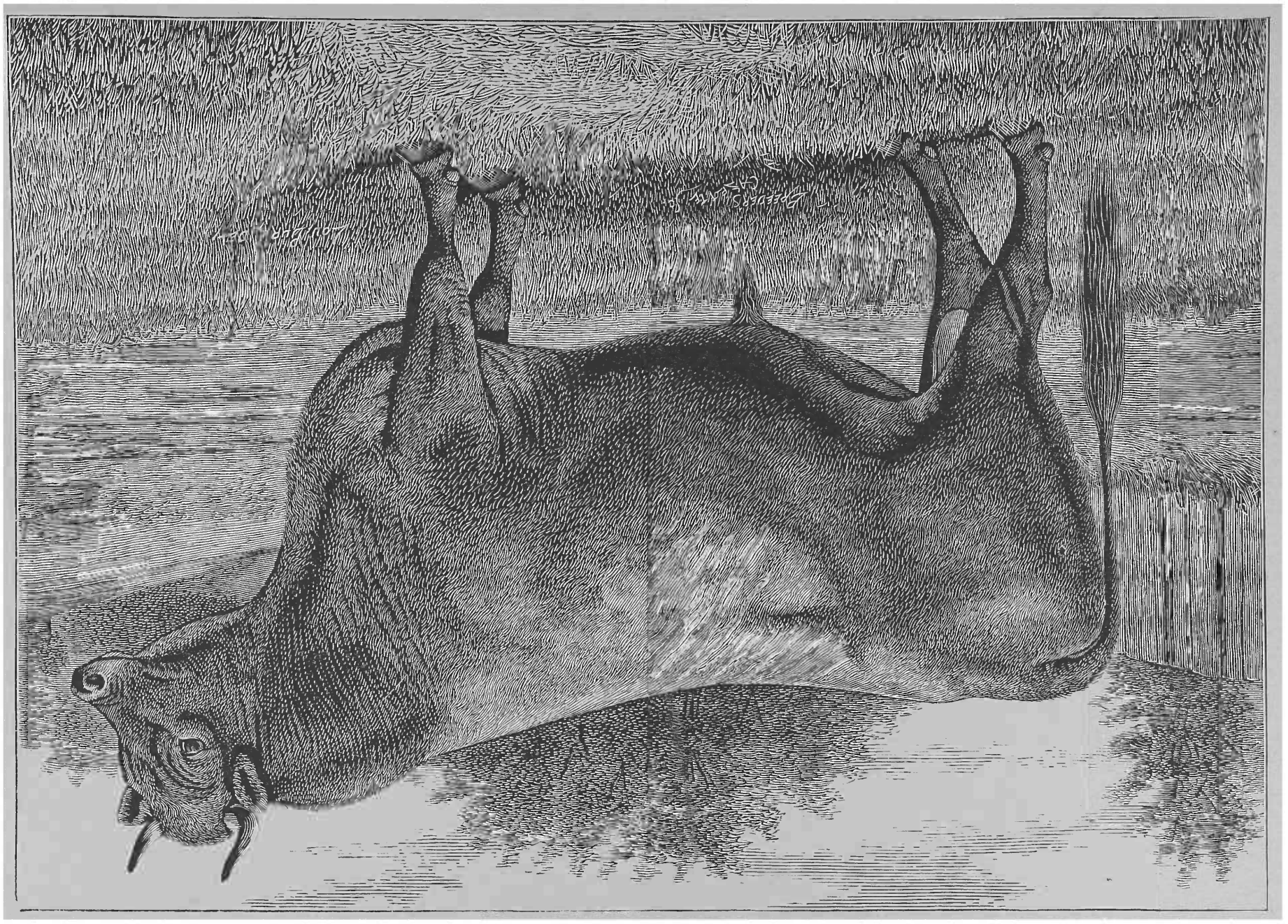
JERSEY BULL CALF KING OF ASHANTEE 6677.

Calved Feb. 15, 1882; bred by S. M. Burnham, Saugatuck, Conn.; got by Fairfield 4733 (a bull tracing to old Noble), and his dam was the famous old Jersey matron Coomassie 11874, the maternal ancestress of so many great butter cows. Solid color, with black points; owned by C. Easthope, Niles, O., and used by him as his principal breeding bull. Sketched by Burk, showing him at a little over one year old.



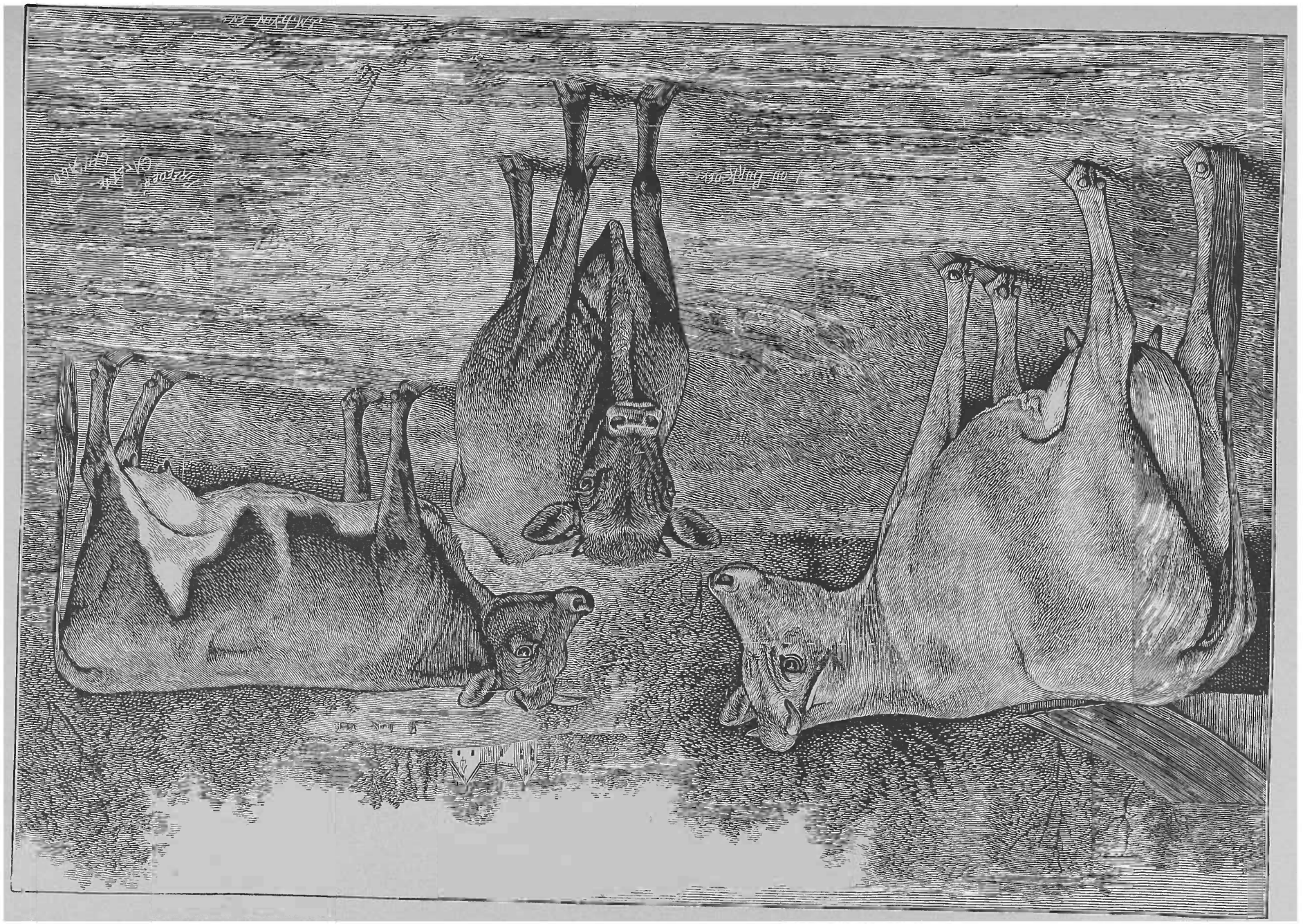
JERSEY BULL PEORIA CHIEF 4984.

Calved Feb. 6, 1880; got by Colonel Butler 1561 (son of Excelsior of Jersey, out of Grace Darling 2d), dam Pomare 6003, a granddaughter of Mercury 432. Solid color, black switch. Owned and kept at the head of the breeding herd of D. H. & S. S. Tripp, Peoria, Ill. This bull was very successful in the show rings at the Illinois State Fair in 1882, when he was awarded four first prizes. Sketched from life by Burk.



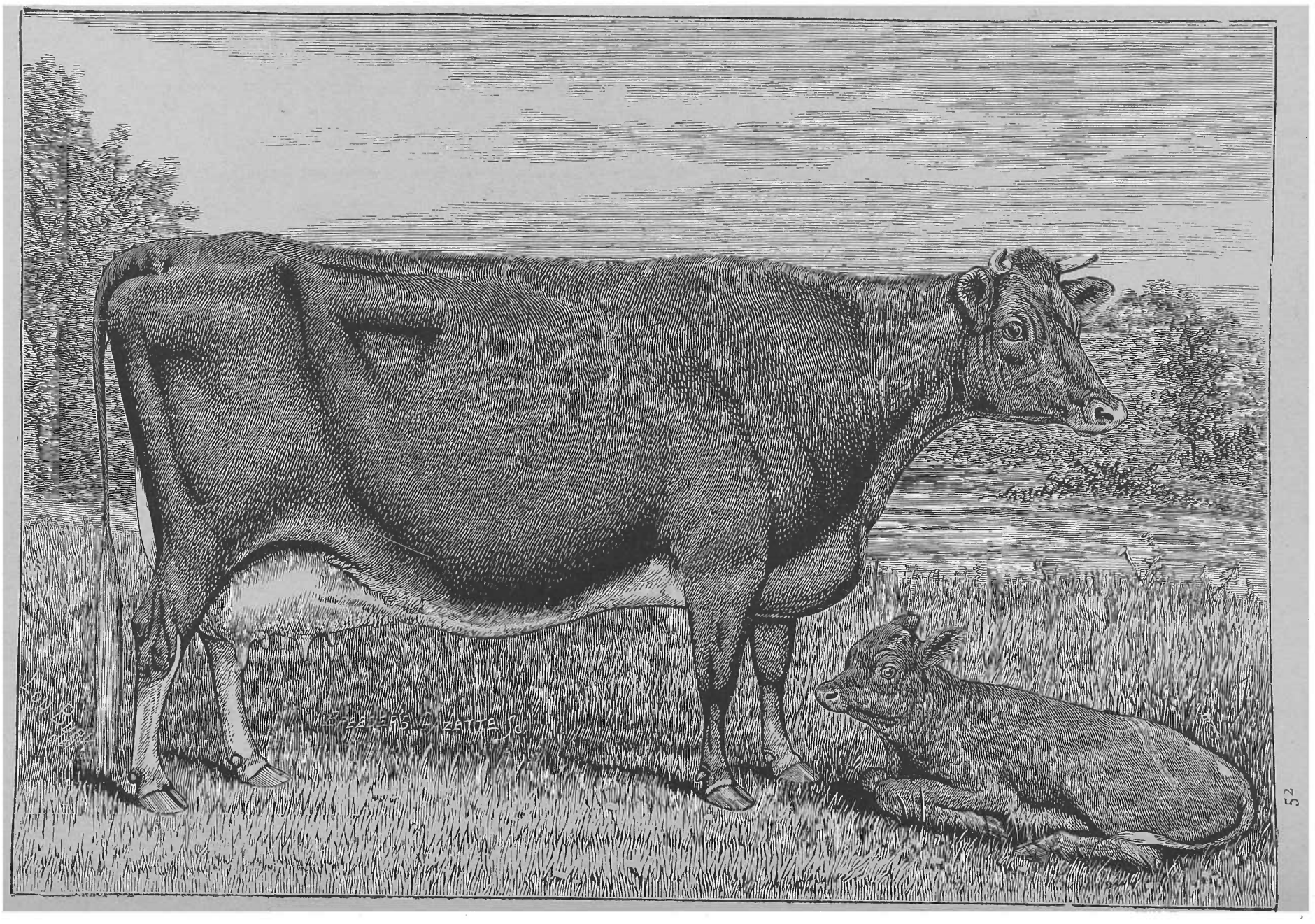
GROUP OF JERSEY CATTLE.

The group on the opposite page is made up of selections from the Jersey herd of C. S. Dole, Esq., of Crystal Lake, Ill. The fawn-colored cow on the left, as we look at the picture, is Belle of Collingwood 5565. This cow is especially rich in the blood of Albert 44. Her sire, Simon Peter 1848, was by Pansy's Albert 1008, son of Albert 44, and Simon Peter's dam was also by Albert 44; his 2d dam by McClellan 25. Belle of Collingwood's dam was Flora 3d 4369, and she by Albert 44; 2d dam Flora 420 (by McClellan 25), a granddaughter of imp. Pansy 8. The other cow is Quaker Girl 4551, a nearly solid-colored dark fawn, and is a full sister to Belle of Collingwood. Neither of these cows have been tested for butter. The bull calf, which forms the center of the group, is out of Quaker Girl, and was got by Daisy's Champion, a bull that traces twice in three removes to Champion of America 1567, and whose dam is a daughter of Rex 1330. Sketched from life by Burk.



GUERNSEY COW ROSEBUD OF LES VAUXBELETS 4TH.

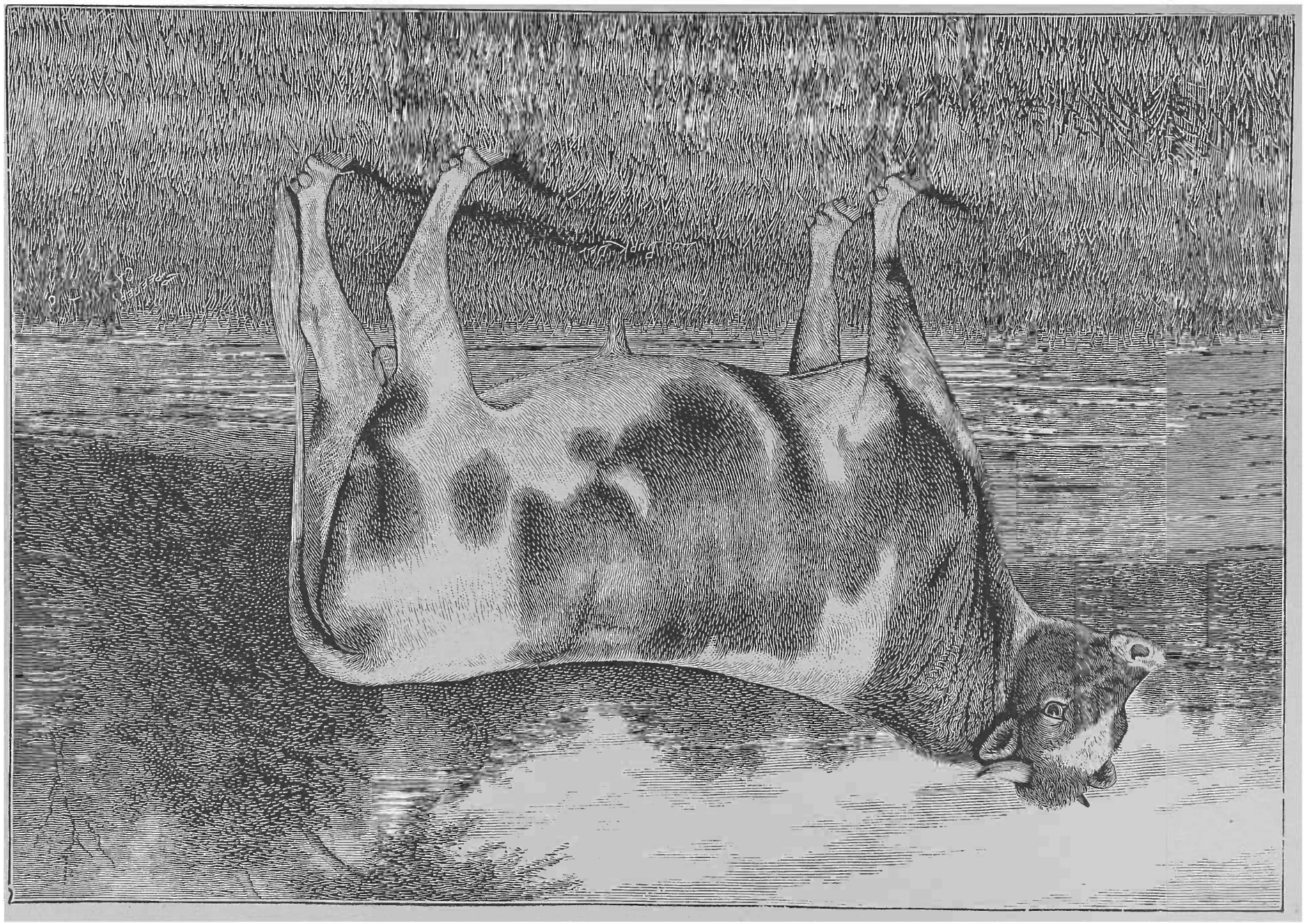
Calved July 19, 1879; bred by James James, Island of Guernsey, and imported 1882 by her present owner, I. J. Clapp, of Kenosha, Wis. Color, fawn with some white. Tested at four years old, in midsummer, running on grass with other cows and fed same as Mr. Clapp's other dairy stock, showing a yield of 17 lbs. 10 oz. of butter in seven days. Sketched from life by Burk.



52

GUERNSEY BULL SIR CHAMPION 13TH 320.

Bred by Thomas M. Harvey, of Pennsylvania; got by imp. Sir Champion 30, dam Worthy Beauty 295. This bull is regarded as one among the best representatives of the breed in America. He is owned by I. J. Clapp, of Kenosha, and N. K. Fairbank, of Chicago, and is used jointly by both of these gentlemen at the head of their breeding herds. His weight at a little short of sixteen months old was 944 lbs. Sketched from life by Burk.



CHAPTER XVII.

AYRSHIRE CATTLE.

No better epitome of the history of the origin of the breed can be given than the following from that most excellent work "The Domesticated Animals of Great Britain" by Prof. Low:

"Authentic records are wanting to show by what progressive steps the dairy breed of Ayrshire has been molded into its present form. That it was late in arriving at the estimation in which it is now held is well known. The old breed of the country seems to have been one of those varieties of coarse cattle, with horns of a medium length, which formerly occupied all the central mountains south of the Forth, and extended into the plains. Mr. Ayton, who published a treatise on the dairy husbandry of Ayrshire in 1825, describes them, from recollection, as having been a puny, unshapely race, not superior to those yet met with in many of the higher districts. They were mostly, he tells us, of a black color, marked with white on the face, the back and the flanks, and few of the cows yielded more than from one and a half to two gallons of milk in the day, at the hight of the season, or weighed, when fat, more than twenty stones. But previous to the period referred to cattle of other races had been mingled in blood with the native Ayrshire. It is stated, on competent authority, that, even so early as the mid-

dle of the century, the Earl of Marchmont had brought from his estates in Berwickshire a bull and several cows which he had procured from the Bishop of Durham, of the Teeswater breed, then known by the name of the Holstein or Dutch breed; and mention is made of other proprietors who brought to their parks foreign cows apparently of the same race. To what degree these casual importations affected the native breed of Ayrshire is not certainly known; but tradition refers likewise to an early importation of individuals of the Alderney breed to the parish of Dunlop, which became first distinguished for its cows and the produce of its dairy. This tradition is almost confirmed by the similarity existing between the Alderney breed and the modern Ayrshire, which is so great as to lead us, independently of tradition, to the conclusion that the blood of the one has been largely mixed with that of the other. There is the same peculiar character of the horns and color of the skin, and the general resemblance of the form is so great that in many cases a Jersey cow might be mistaken for an Ayrshire one. We may assume, then, from all the evidence which in the absence of authentic documents the case admits of, that the dairy breed of Ayrshire owes the characters which distinguish it from the older race to a mixture with the blood of races of the continent, and of the dairy breed of Alderney.

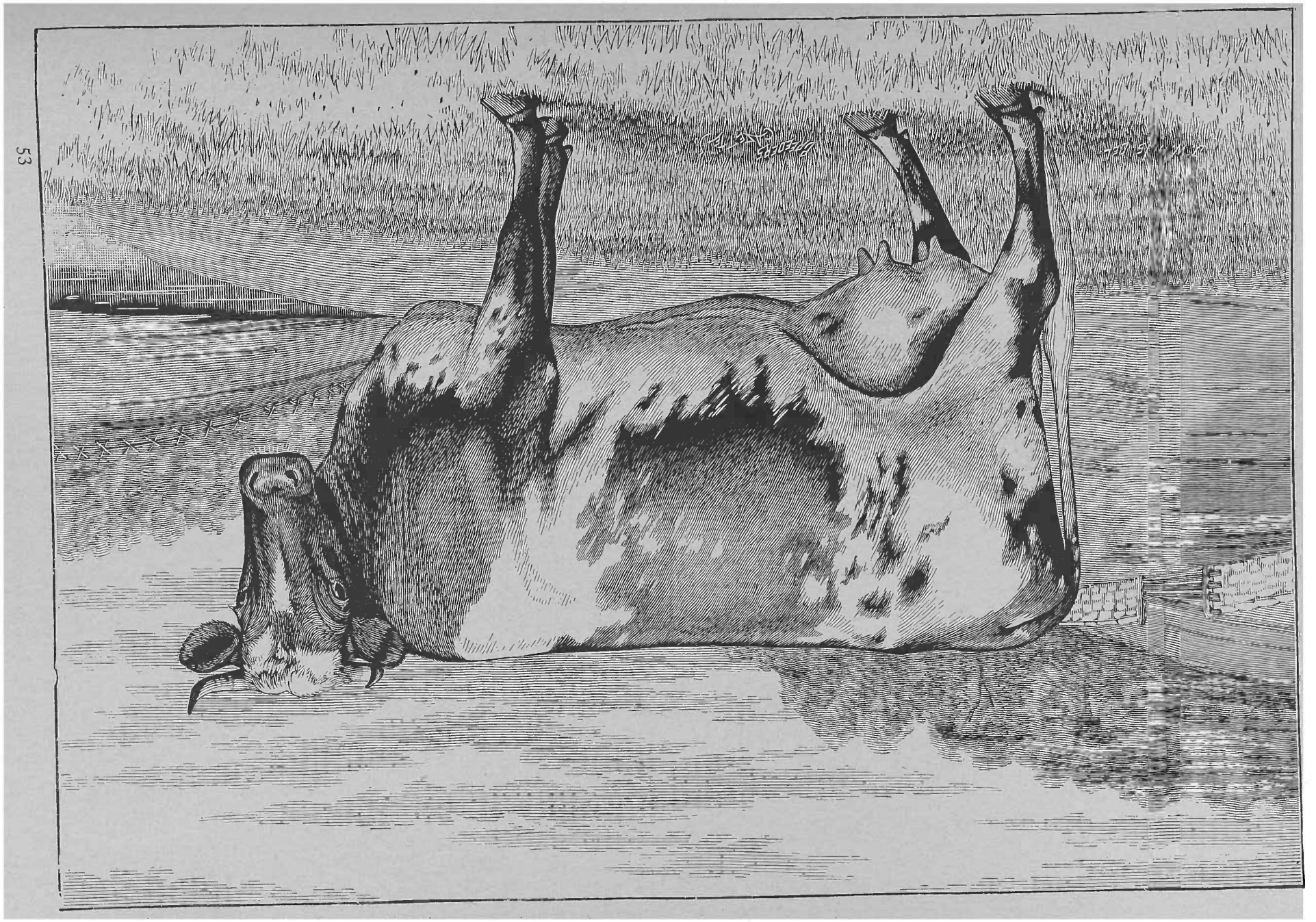
"The modern Ayrshire may stand in the fourth or fifth class of British breeds with respect to size. The horns are small and curving inward at the extremity after the manner of the Alderneys. The shoulders are light, and the loins very broad and deep, which is a conformation almost always accompanying the property of yielding abundant milk. The skin is moderately soft to the touch, and

of an orange-yellow tinge, which appears about the eyes and on the mammæ. The prevailing color is a reddish-brown, mixed more or less with white. The muzzle is usually dark, though often it is flesh-colored. The limbs are slender, the neck is small, and the head is free from coarseness. The muscles of the inner side of the thigh, technically called the twist, are thin; and the haunch frequently droops much to the rump, a character which exists likewise in the Alderney breed, and which, although it impairs the symmetry of the animal, is not regarded as inconsistent with the faculty of secreting milk. The udders are moderately large, without being flaccid. The cows are very docile and gentle, and hardy to the degree of bearing to subsist on ordinary food. They give a large quantity of milk in proportion to their size and the food consumed, and this milk is of excellent quality."

The importation of Ayrshire cattle into the United States began about 1830, but notwithstanding the fact that they possess general dairy qualities of a high order, and a considerable aptitude to lay on flesh when it is desired to make beef of them, they have not become generally popular even in dairy districts. In the New England States they are quite common, but they have made very little headway in the Western States. The general form of the Ayrshire cow is the typical "wedge shape" so often spoken of as characteristic of a good dairy cow—small head and neck, light fore quarters broadening out into a comparatively large trunk, with large, wide hind quarters. The color, all the various shades of red from light red to brown, and frequently flecked with fine white spots, as shown in our illustrations. The Ayrshire Herd Book of America is under the management of C. M. Winslow, Brandon, Vt.

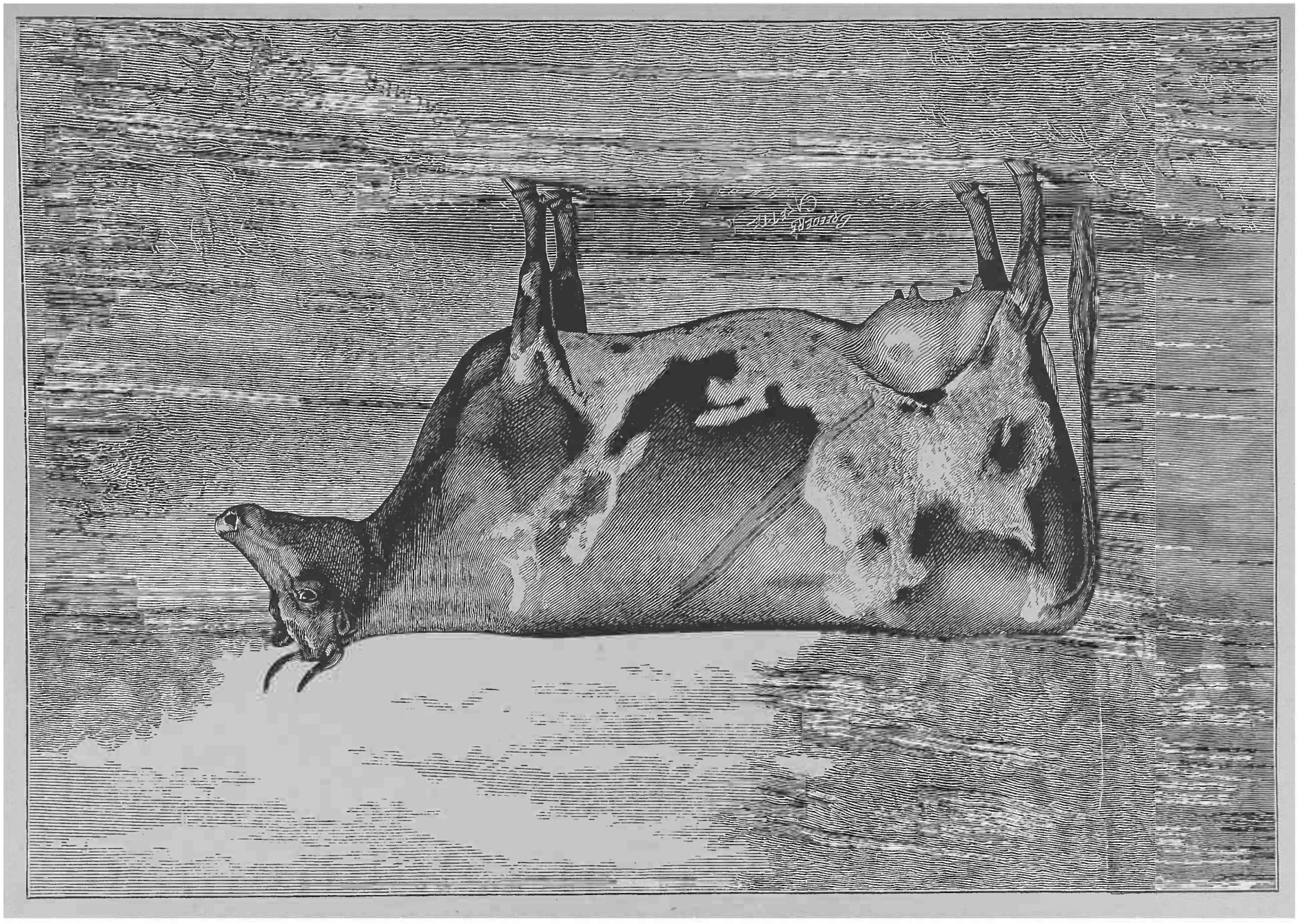
AYRSHIRE COW ALICE DOUGLAS 4398.

The engraving on the opposite page is regarded as an unusually faithful likeness of the Ayrshire cow Alice Douglas 4398, owned Mr. George A. Fletcher, of Milton, Mass. This cow has been frequently tested by her owner, and has a record of 407¾ lbs. of milk in seven days, 1,695 lbs. in thirty days, and 4,031 lbs. in eighty days. From Feb. 10 to Aug. 6, 1886—181 days—she gave 8,250 lbs. of milk, an average per day of 45.56 lbs., or 21.19 quarts. When four months in milk she made a butter record of 10 lbs. 12 oz. in seven days. Sketch made by Hills from a photograph from life.



AYRSHIRE COW GURTA 4TH 1181.

Calved 1879; bred by Thomas Guy, of Canada. This cow is a deep milker, having a record of 50 lbs. of milk per day, and she weighs nearly 1,200 lbs. She has been among the most prominent of the representatives of her breed at many of the leading live-stock shows of Canada and the United States. Owned by Messrs. Coldren & Lee, Iowa City, Ia. Sketched from life by Palmer.



CHAPTER XVIII.

OTHER BREEDS OF CATTLE.

WEST HIGHLANDERS.

This shaggy, picturesque breed, so popular in the West Highlands of Scotland, has been but sparingly introduced into the United States. Their probable relationship to the polled breeds of Scotland, especially the Galloway, is referred to on page 328 of this volume. They are undoubtedly descended from the native cattle of that country, and are among the most hardy of all known breeds of the bovine race. They are small, with long horns, and covered with a heavy, shaggy growth of long, fine hair, giving them a most picturesque appearance. The beef produced by this breed is of unusual excellence. They are of various colors, dun, brown and black predominating.

KERRY CATTLE.

The Kerry cattle of Ireland, a few of which have been brought to this country, are found chiefly in the mountainous County of Kerry, the most westerly land of Europe, and are described by Low as being generally black, with a white ridge along the spine, a character agreeing with the account which older writers have given of the Uri of the woods of Poland. They have often also a white streak upon the belly, but they are of various colors, as black, brown,

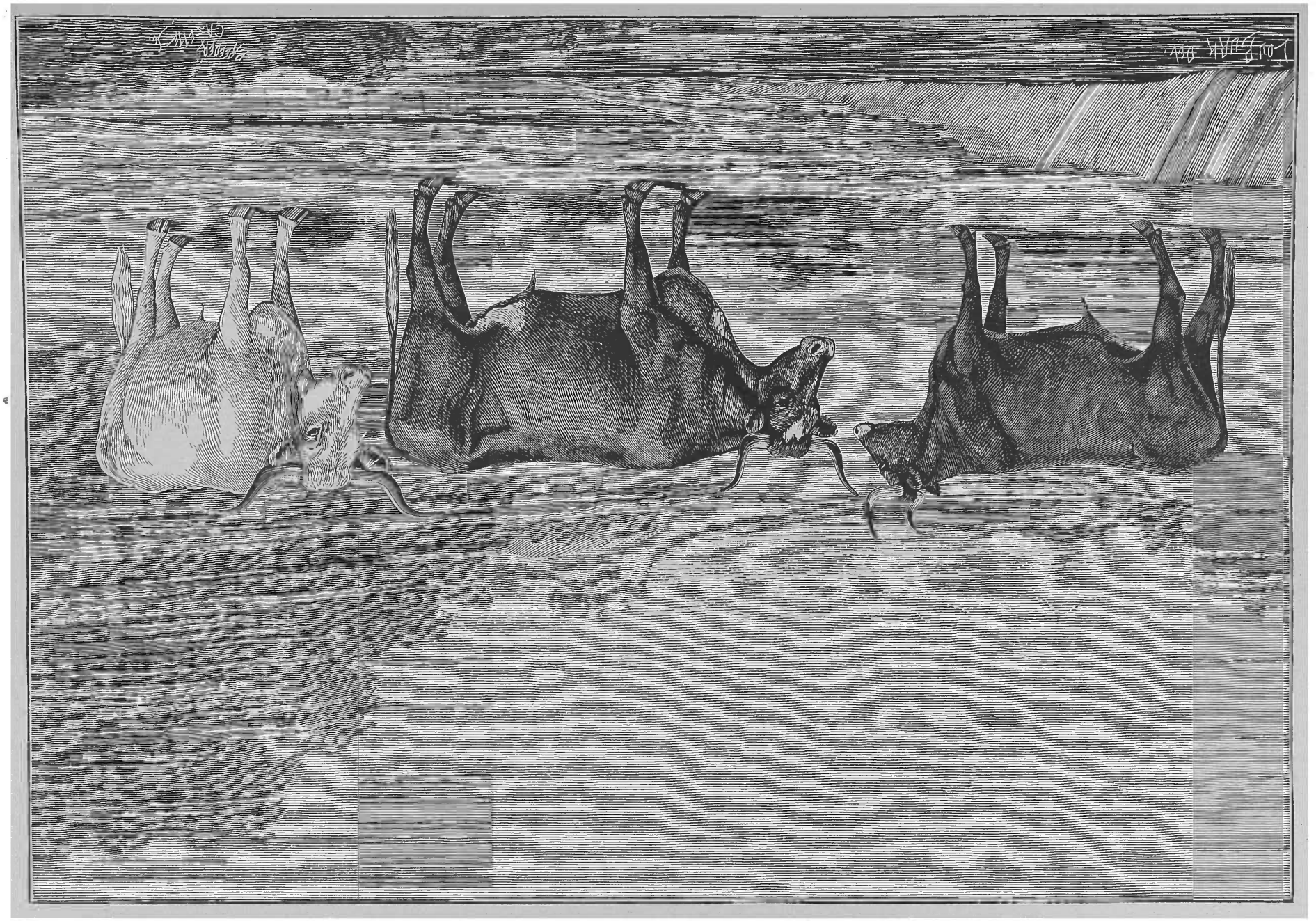
and mixed black and white, or black and brown. They are, as might be expected from the place of their nativity, remarkably hardy, but of small size, and are especially valuable as a dairy breed.

SWISS CATTLE.

The Swiss cattle that have been brought to this country, most of them within the past ten years, have given very good satisfaction. They possess superior dairy qualities, are of medium size, and fatten readily. They are of various colors in their native country, but those that have been imported into the United States have been of a dun or "mouse color."

TEXAN CATTLE.

The cattle that for centuries have grazed on the plains of Texas and the adjacent countries, and more recently been used extensively as *nuclei* of breeding herds in more northern regions, are believed to be descendants of cattle brought over by the original Spanish settlers. They are a large, coarse, raw-boned breed; active, hardy, slow in coming to maturity, take on fat sparingly, and are especially remarkable for their immense horns. Their colors vary from a light dun or pale yellowish red to black, with various markings of white. The illustration on the opposite page is a thoroughly representative picture of the typical Texan steer.



CHAPTER XIX.

THE BREEDS OF SHEEP.

Sheep are commonly classified according to the characteristics of fleece. Thus results the terms fine wool, long wool, middle wool, so familiar in breeding and exhibition circles. Each of these grand divisions is subdivided into varieties more commonly designated by their peculiar habitat, the name of the breeder most intimately identified with their development, etc. The typical animals of these divisions are so unlike in size and general appearance as to leave upon the mind of the novice an impression that they belong to an entirely different race; while between certain of their numerous subdivisions the resemblance is so striking as to require the critical eye of the expert for determining their proper designation.

MERINOS.

The origin of the fine-wool sheep—the Merino in its several varieties—so far antedates any known history as to preclude the possibility of enlightenment upon that point beyond what is furnished by conjecture. However interesting authentic information might be to the student of history, all that the practical breeder could realize from such information is a knowledge of the fact that the descendants of admirable fine-wool sheep have been carefully bred and reared

in Spain and pure-bred descendants from these in other countries for nearly or quite two thousand years; and from these Spanish flocks, attaining their highest excellence during the latter half of the eighteenth century, have sprung all the fine-wool varieties of sheep, however widely divergent their present types may seem. In 1765 a number of fine-wool sheep—supposed to be about three hundred—were taken from Spain into Saxony, where, owned and controlled by the royal families, they assumed certain peculiarities of form and fleece materially differing from the parental stock. Some twenty years later (1786) the first importation of importance—some three hundred in number—was made into France. These also became the objects of royal care, and, through a system of care and breeding, assumed a changed type and became the source of the French Merino.

Though a very few animals had been brought here previously, the shipment of Spanish Merinos to the United States really began in 1801–2, between which date and the year 1812 large numbers, probably as many as twenty thousand, were landed and scattered chiefly through the New England and Atlantic States. Conspicuous in these importations were David Humphreys, Minister to Spain; Chancellor Livingston, Minister to France, and Wm. Jarvis, Consul to Portugal. A large proportion of the Merino flocks of the United States, descendants of the importations from Spain, were subsequently interbred with the Saxon and French varieties, until many of the characteristics of these were engrafted upon American flocks. Through the exceptions to this rule, however, a sufficient number of flocks have been found tracing with reasonable proof of purity direct to their Spanish ancestry to warrant the claim that

the present highest type of American Merino is the direct descendant, without admixture of other blood, of animals included in some of the several importations from Spain made prior to the year 1812. Full-grown rams of this breed will weigh from 120 to 180 lbs., and the ewes some forty pounds lighter. The wool is fine and dense, and is characterized by heavy folds in the skin. The general appearance of sheep of this breed is clearly indicated by the typical illustration on page 439.

The French Merinos have perhaps a larger carcass than the average American, and the French breeders were the first to produce a Merino combing wool, from which have developed some of the most interesting and profitable branches of the wool manufacture; though they have subsequently found rivals among the breeders of fine-wool sheep in America, Germany, and Australia.

The Saxon Merinos have been but sparingly introduced into this country, the course of breeding in Saxony (fineness of fleece having been the one absorbing object sought) having rendered them too tender for our methods of sheep husbandry. Among such as have been brought over, however, it may be said that the sheep, as well as the fleece, have been materially modified; the fiber, though fine, is lengthened and the weight greatly increased, while the carcass is equally improved. This animal commends itself to breeders who aspire to the production of a superfine wool.

COTSWOLDS.

As early and as fast as the increase of population, and the consequent enhanced value of lands, required a larger return from their holdings, English farmers wisely sought, and were remarkably suc-

cessful in securing, such precocity and symmetry in their meat-producing animals as would make animal husbandry possible under the changed condition of their agriculture; and the sheep was early seized upon as offering the readiest solution of the perplexing problem. With a climate unsuited to the profitable production of fine wool, and facing a demand for a meat supply that would not be ignored, the mutton production that is so conspicuous a feature of the sheep husbandry of the United Kingdom is by no means the result of accident. The English long-wool sheep, symmetrical in outlines, and in every detail of carcass so well calculated to give a profitable return for what it consumes, has found admirers in every country where economical meat and wool production has been attempted.

Among Americans the best known and most popular variety of long-wool sheep is the Cotswold. Its origin, like that of many other popular types of domestic animals, is enveloped in obscurity. The original Cotswold was a much coarser animal than its improved successor of the present day. It has been refined in its general anatomy, its carcass has been improved in outline and detail, its fleece has been greatly ameliorated, its precocity increased — in short, its development has kept pace with the rapid strides in other branches of live-stock development until the typical Cotswold has become an admirable specimen of physical development. A well-poised head, with its characteristic foretop, made to appear small by reason of the massiveness of the body when in full fleece; back broad and straight; body well rounded over a deep flank and full brisket — the whole draped by a fleece of spotless white, averaging eight to ten inches in length, and weighing from eight to sixteen pounds —

furnish a *tout ensemble* well calculated to "fill the eye" of the most fastidious connoisseur.

Just the kind and number of "out-crosses" that have been resorted to by those who have brought the Cotswold to its present standard will never be known. The Leicester has been credited with contributing in no small degree to this end, and it is probably entitled to such honor.

LEICESTERS.

Though for more than a hundred years a popular sheep in England, the Leicester has not secured a high place in the estimation of American breeders. An animal of conspicuous merits, intensified by a century and a quarter of careful and intelligent breeding, it combines many excellencies that would seem to commend it to the farmer who seeks to bring to a higher mutton-producing standard his flock of native or low-grade animals.

Youatt's description of the typical Leicester may be condensed as follows: "The head hornless; ears thin, long, and directed backward; neck full and broad at base, gradually tapering to the head; breast full and broad; shoulders broad and round; arm fleshy, even down to the knee; bones of the leg small, standing wide apart, and comparatively bare of wool; quarters long and full; thighs wide and full; pelt thin and covered with a good quality of white wool, not so long as in some breeds, but finer."

This description applies to the improved Leicester, as distinguished from the Leicester type before its amelioration under the manipulation of Robert Bakewell, of England, who began, about the middle of the last century, that series of efforts at improving the proclivities for cheaper mutton production of the sheep in his vicinity

which has resulted in transmitting to the present one of its highest types of meat-yielding animals.

Mr. Bakewell was so reticent as to his system of improvement that little concerning it is positively known. Certainly he converted a coarse-boned, slab-sided, slow-maturing animal into one symmetrical, precocious and capable of being profitably employed on lands devoted to the production of improved crops. That he did not scruple to go outside the original Leicesters for fresh blood is highly probable, and liberal feeding, even to forcing, was his invariable rule. A knowledge of its history, and the steps by which its improvement was secured, clearly indicate the Leicester as the sheep for close farming. It will not thrive under conditions that are well suited for the profitable employment of some other types of long-wool sheep. It requires extra nutritious food and shelter from extreme temperatures for the successful breeding of the Leicester, and to this fact is to be ascribed the lack of popularity of the breed with American farmers.

LINCOLNS.

This heaviest of the English sheep has found but few admirers in the United States, most of its desirable characteristics being presumably combined with those of the Cotswold and Leicester. The original type of the Lincoln, as it existed a century ago on the low, rich lands of the locality from which its name is derived, was that of a coarse, large sheep, presenting for the eyes of modern breeders few desirable features. The fleece was long and open, carrying more oil than some of its congeners. When highly fed it furnished good mutton, with less fat on the outside and more internally than most of its rivals for popular favor. The coarse frames

of the Lincolns, with their comparatively slow-maturing propensity, doubtless early suggested an employment of the better-outlined and more precocious Leicesters, then developing under the supervision of Robert Bakewell; and thus the "Bakewell" blood, as well as the stimulus of the success of Bakewell's labors, undoubtedly contributed to advance the standard of mutton production throughout England more generally than some breeders of the present will readily admit. Though long in-bred, and probably as purely as its rival varieties, it was not until within the past twenty years that the Lincoln has been recognized as a distinct variety by the management of stock shows.

Quite remarkable yields of flesh and fleece have been secured, in this respect placing this sheep well up on the list of English favorites. Requiring for its successful employment the richest pasturage and "high feed" under all circumstances there has not been found the same encouragement for its distribution that has contributed to popularize many other varieties. From 1835 to the present time occasional importations have been made into the United States, though the number of animals, in any instance, has never been large.

OXFORDS.

The Oxfords, recognized as a distinct variety for little more than twenty years, is less known in this country than either of its long-wool contemporaries of English flocks. It was originally produced by the cross of a Cotswold ram with Hampshire (and, it is said, occasionally Southdown) ewes and the subsequent coupling of the progeny from these. These animals, for some years classed as cross-bred sheep under the designation of Down-Cotswolds, were given a

definite title by a meeting of breeders in 1857, and have since been known as Oxfordshire Downs. As an analysis of their breeding will disclose, and as indicated by the appearance of the animals, they are more properly classified with the long-wool than the Down breeds. In the Hampshire Down, the acknowledged foundation on the one side of the Oxford, there was unquestionably a predominance of long-wool blood. The Oxford has many characteristics commending it to the favor of American breeders. It has size of carcass and a prolificacy that insures lambs for an early market. It has a length of fleece that insures for the wool clip the attention of buyers who require long wool. The body is well rounded; legs short; and in its native locality evinces a hardiness and adaptation for profitable feeding unsurpassed by any of the English types. The weight of full-grown ewes is 80 to 100 lbs., and of rams, in working order, 160 to 200 lbs. The mutton is of superior quality and commands a high price.

SOUTHDOWNS.

The middle-wool breed, in its several varieties, undoubtedly includes the most generally popular sheep. Bred and fed through many years with especial reference to improvement in quantity and flavor of flesh, the best types of middle-wool sheep stand today very near the ideal of a perfect meat-producing animal. To the flocks of "the Downs," in their varied types, the epicurean Englishman looks for the savory flesh that has already lessened the demand for his traditional roast beef. The black foot, invariably left when dressing the carcass, insures for the "quarter," for which it is the insignia of merit, a ready sale at a price "the top of the market." The middle-wool sheep are not heavy shearers; their wool is coarse,

inclined to be dry, and though often of sufficient length to be easily combed, is not classed as combing wool.

The Southdown stands confessedly at the head of the several varieties of middle-wool sheep. While some might question its priority in the matter of individual merit, none will gainsay the claim that to the Southdown most other types of middle wools are indebted for their "best blood." On the chalky hills of Sussex and adjoining shires through several centuries there has existed a variety of sheep taking its name from the locality — the sloping lands to the south — Southdowns. These animals have long been conspicuous for the quality of their mutton, as well as their peculiar adaptability to thrive on a comparatively scanty herbage. They were probably horned in their earlier history, though this tendency has been overcome by breeding, and even the smallest horns on the male animal of today are not tolerated.

The description of a typical Southdown, as given by Mr. Ellman, the most noted improver of the breed, may be condensed as follows: "Head small and hornless; face speckled or gray; space between the nose and the eyes narrow; ears tolerably wide and covered with wool, and the forehead also; and the whole space between the ears well protected by it; breast wide, deep, and projecting forward between the fore legs; ribs coming out horizontally from the spine and extending far backward, and the last rib projecting more than others; the ribs generally presenting a circular form like a barrel; the belly as straight as the back; legs neither long nor short; the fore legs straight from the breast to the foot, and standing far apart both before and behind; the bones fine and of a speckled or dark color; the belly well defended with wool, and the wool coming down

before and behind to the knee and to the hock; the wool short, close, curled and fine, and free from spiry projecting fibers."

The Southdowns are not conspicuous shearers. Their fleeces are dry, coarse, and light, in comparison with the weight of carcass; but the fiber is strong, and insures good service in the fabrics for which it is adapted. The prominent characteristics of the Southdowns — vigor, precocity, fecundity, and propensity to develop well-marbled flesh at the most desirable points — especially commend them for crosses where mutton production is chiefly sought.

HAMPSHIRE DOWNS.

The breeders of Hampshire and Wiltshire in England, among whom had long been cultivated a large-sized, hardy sheep, white-faced and with horns, early in the present century secured and used Southdown rams, and by subsequent in-breeding and occasional use of other blood succeeded in establishing a variety now recognized as Hampshire Downs, with the prominent Down characteristics — dark face and legs, hornless head — thoroughly fixed. Referring to the origin of these sheep Mr. Spooner, in 1859, said:

"If we were asked, What original blood predominated in the Hampshire sheep? we would unquestionably say the Southdown; but if the further question were put: Is the present breed derived from the Southdown and the original Hampshire alone? we should express a doubt as to such a conclusion, as there is good reason to consider that some improved Cotswold blood has been infused. * * * * Although after dipping once or twice into this breed they then ceased to do so, yet they have continued breeding from the descendants of the cross."

As would be inferred from its foundation the Hampshire is larger than the Southdown and bears a fleece — though classed as a middle wool — exceeding the latter in length, but not so fine. The mutton is good. The breed has not been largely imported into the United States, though possessing many characteristics that seem to commend it to breeders so ready to see an advantage in every type of animal promising flock advancement. The probable reason is to be found in the fact of its close resemblance to the Southdown (which it excels only in size), which has been found to so admirably fill the requirements of American flock managers in producing a first-class mutton sheep.

SHROPSHIRE DOWNS.

Though but recently recognized as a distinct variety, none of the English types have advanced more rapidly into public notice and favor than the Shropshires. Their size, rotundity and general carriage commend them to the notice of the casual observer, while they "fill the eye" of the critical judge and experienced breeder so completely as to make themselves favorites wherever they may be shown.

The history of the Shropshires, when traced back toward their origin, becomes enveloped in a maze of uncertainty. While all authorities agree that the foundation was a so-called native sheep of Shropshire, and perhaps Staffordshire, described as black or brown, or spotted-faced — and conspicuous for the flavor of their mutton — there is not the same agreement as to the crosses and lines of breeding resorted to. It seems certain, however, that the Southdown and Leicester were both heavily drawn upon, and the merits thus secured afterward intensified by interbreeding from selected animals. The

Shropshire of today retains the black face and legs of its ancestors, as also the well-flavored mutton, while in respect to size, maturity and fleece bearing it has been as thoroughly modernized as any of the meat-producing animals of the present century.

THE CHEVIOT.

This popular sheep, taking name from the hills bordering on Scotland and England, are described by Spooner as a hardy race, thriving well on poor keep. They have white faces without horns; ears large, with much space between the ears and eyes; carcass long, back straight, shoulders rather light, ribs circular, and quarters good; legs small in the bone and covered with wool. As will be inferred from this description the Cheviot is admirably adapted to the mountainous region from which it derives its name. There is no doubt that the Cheviot of today has been considerably modified by crossing with the more improved types, notably the Lincoln and Leicester, to which it is indebted for the white face now so prevalent, as the earlier descriptions give the prevailing color of the face as black. The wool of the Cheviot is always in demand, being especially adapted to certain manufactures, notably the line of goods bearing its name. The fleeces average in weight four to six pounds.

RECORDS, REGISTERS, AND HERD BOOKS.

The following is a list of the various records published for the different breeds of sheep in the United States, with the name and address of the officer in control of each. In addition to these the reader is referred to Stewart's "Shepherd's Manual," Randall's "Practical Shepherd," and a series of articles on "The Breeds of Sheep,"

by A. M. Garland, published in Vols. I, II and III of the *Breeder's Gazette* for information, more in detail, touching the various breeds:

Cotswolds.—American Cotswold Record, George Harding, Waukesha, Wis.

Shropshires.—American Shropshire Record, Mortimer Levering, La Fayette, Ind.

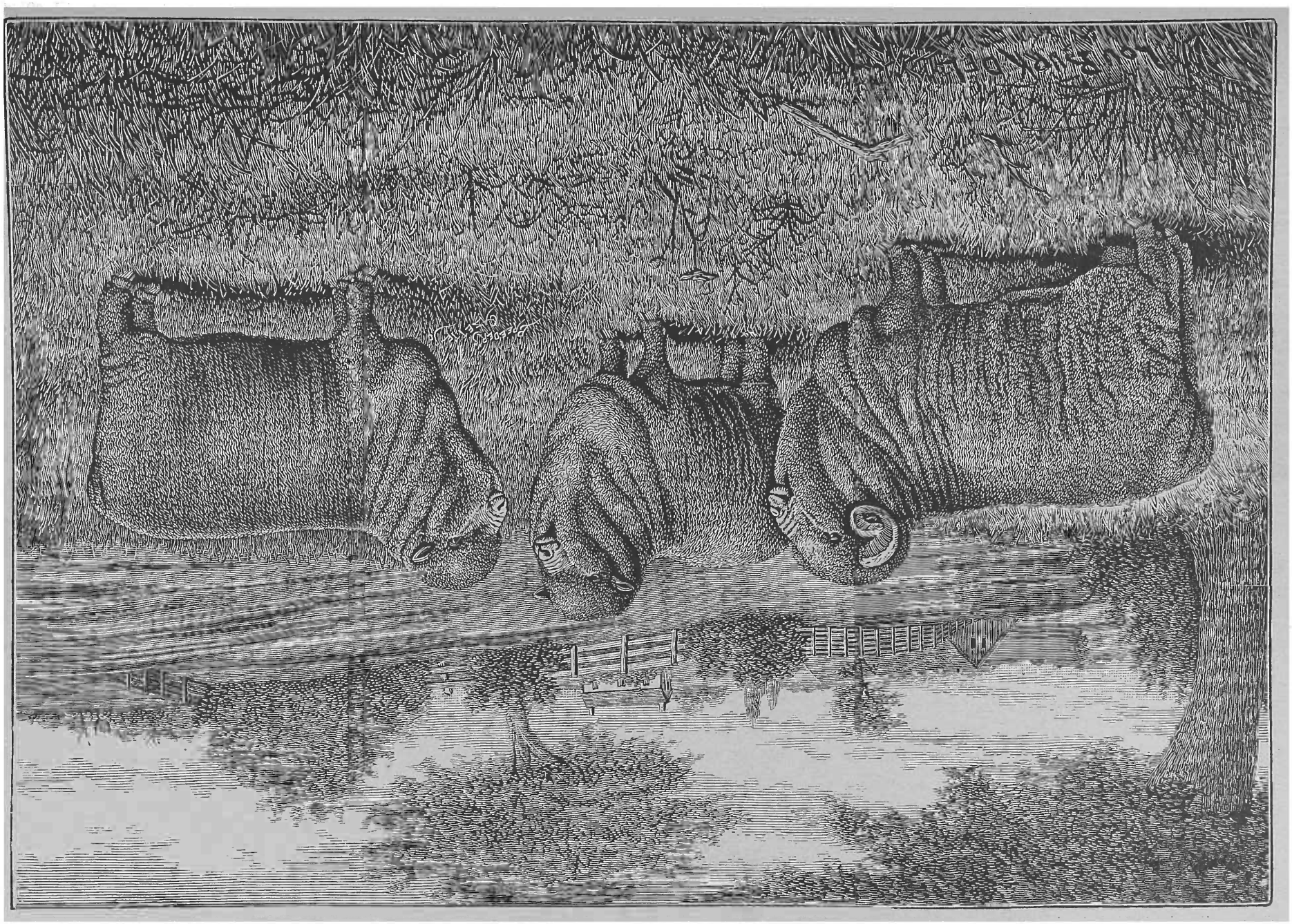
Southdowns.—American Southdown Record, S. E. Prather, Springfield, Ill.

Oxford Downs.—American Oxford Down Record, T. W. W. Sunman, Spades, Ind.

Merinos.—United States Merino Sheep Register, S. C. Gist, Wellsburg, W. Va. Register of the Vermont Merino Sheep-Breeders' Association, Albert Chapman, Middlebury, Vt. Register of the New York State American Merino Sheep-Breeders' Association, John P. Ray, Hemlock Lake, N. Y. Michigan Merino Sheep Register, W. J. G. Dean, Hanover, Mich. Ohio Spanish Merino Sheep Register, J. G. Blue, Cardington, O. Wisconsin Merino Sheep Register, H. J. Wilkinson, Whitewater, Wis. Missouri Merino Sheep Association Register, H. V. Pugsley, Plattsburg, Mo. American Merino Sheep Register, Asa H. Craig, Caldwell, Wis. National Improved Saxony Sheep-Breeders' Association Register, J. H. Clark, Toledo, Pa. Delaine Merino Register, J. C. McNary, Houstonville, Pa. Vermont Atwood Club Register, George Hammond, Middlebury, Vt.

GROUP OF MERINO SHEEP.

The engraving facing this page, showing a ram and two ewes, is a thoroughly typical illustration of the American Merino. The sketch was made from life by Burk, from the flock of C. M. Clark, of Whitewater, Wis. The ram shown in the picture was three years old at the time the sketch was made and was awarded first prize at the annual Wisconsin shearing of 1883, his first clip having weighed 10 lbs. 8 oz.; second, 20 lbs. 8 oz.; and third, 30 lbs. 3 oz. The ewe in center of group is a two-year-old, full sister to the ram; first fleece, 14 lbs. 8 oz.; second fleece, 19 lbs. 7 oz. The ewe on the right has sheared in five consecutive years as follows: 17 lbs. 3 oz., 18 lbs. 4 oz., 17 lbs. 8 oz., 16 lbs. 12 oz., and 18 lbs.

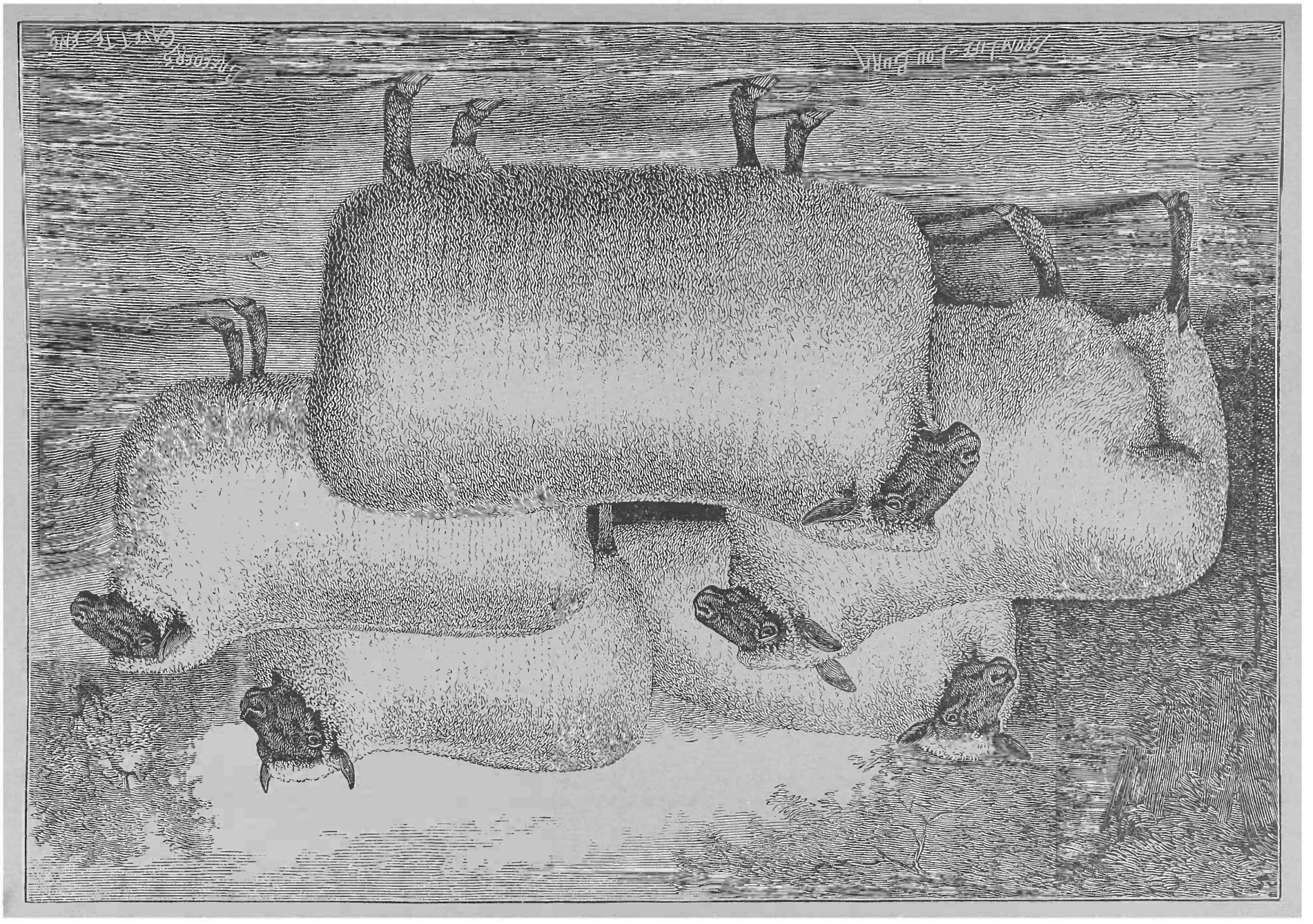


COTSWOLD, LEICESTER, AND LINCOLN SHEEP.

The engraving presented herewith is intended to show a typical animal of each of the three breeds above named; the one on the left with the long foretop is a Cotswold, on the right background a Lincoln, and in the foreground a Leicester. In general appearance these three breeds are quite similar. The Lincoln is the largest of the long-wool breeds, the head is free from wool, the bones are large, the fleece is long and lustrous and at full length usually parting along the back. The Cotswold fleece is denser than either of the others and is shorter than that of the Lincoln, although covering the body more completely, and the long tuft of wool on the foretop is one of its marked peculiarities. The Leicester fleece is similar to that of the Cotswold but not so dense, and is from seven to nine inches in length. It has a tuft of wool on the forehead, but not so long as that on the Cotswold. The face is sometimes slightly colored. For fuller particulars as to the characteristics of and differences between these breeds see pages 427 to 431.

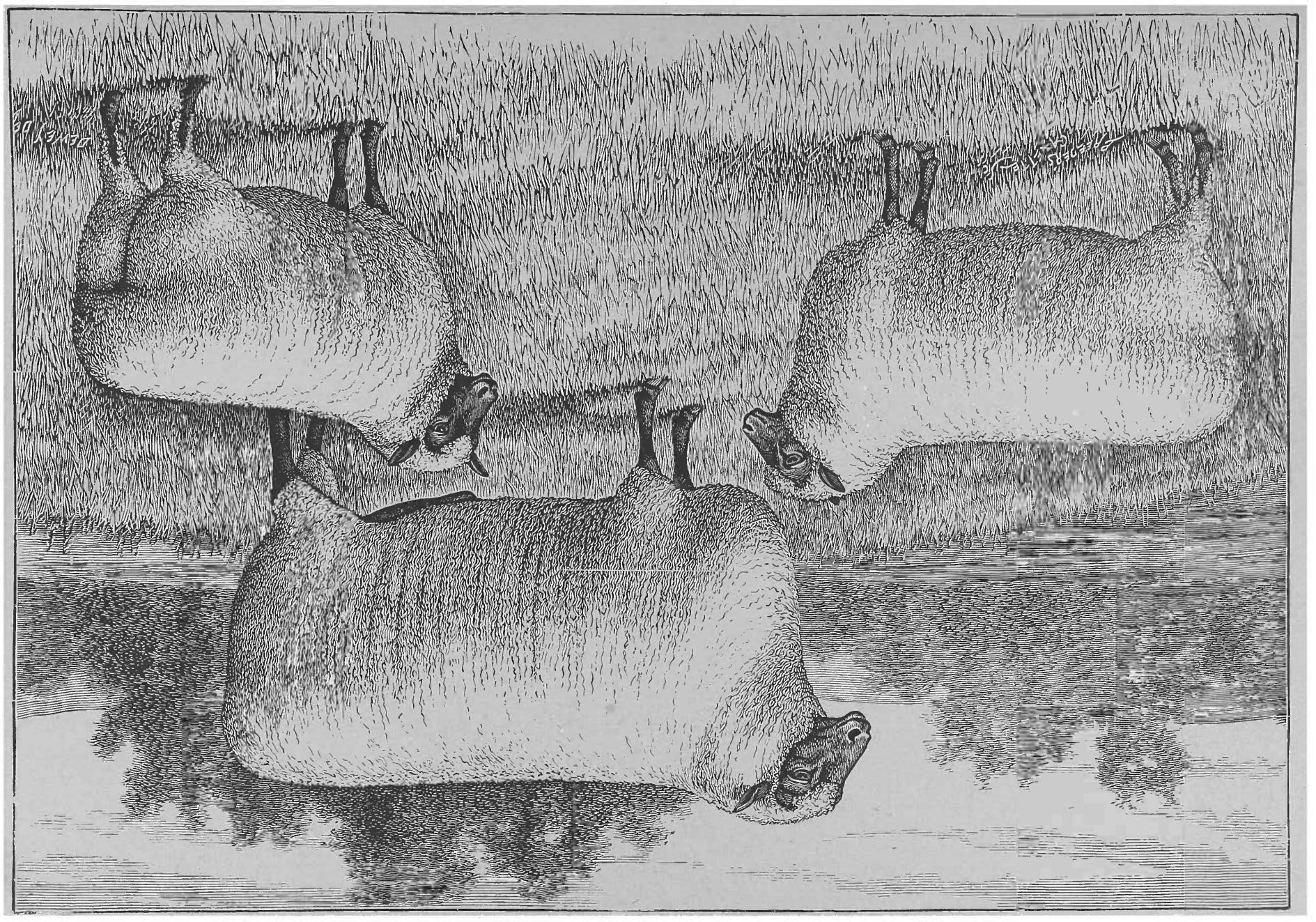
GROUP OF OXFORD SHEEP.

A very full description of this breed may be found on page 431 of this volume. The sketch on the opposite page was made from life by Burk and is a faithful portrayal of representative animals of the breed.



SOUTHDOWN RAM AND EWE LAMBS.

The illustration on the opposite page represents specimens from one of the leading flocks of Southdowns in the country — that of the Hon. D. W. Smith, of Bates, Ill. The trio consists of the ram imp. Baron Thetford (21 American Southdown Record), bred by Lord Walsingham, Merton, Thetford, England, and imported in 1880. He was sweepstakes winner at the St. Louis and Philadelphia Fairs of that year, and was bought for use in Mr. Smith's flock in the autumn following, and has not been shown since. The two ewe lambs shown are Penelope 4th 27 and Belle of Boskymead 23; both tracing through Pickrell and Wentworth rams to importation of 1857, from the flocks of Jonas Webb, England. See page 432 for particulars touching this breed.



GROUP OF HAMPSHIRE DOWNS.

As will be seen by reference to the descriptive matter on pages 434 and 435, and a comparison of the illustration on the page facing this with the preceding one, the Hampshire Down and Southdown breeds are quite similar in many respects. Our illustration of Hampshire Downs was sketched from life by Burk from the flock of C. S. Dole, of Crystal Lake, Ill., who holds the Hampshire breed in very high esteem.

GROUP OF SHROPSHIRE DOWNS.

The Shropshire Down breed is fully described on page 435 of this volume. The illustration given herewith was sketched from life by John W. Hills from the large flock of this breed owned by his father, C. Hills, Esq., of Delaware, O.

J.W.HULS
1886

CHAPTER XX.

THE BREEDS OF SWINE.

The breeds of swine known in this country have with rare exceptions come to us from Great Britain or have been formed by American breeders from the intermingling of the British breeds, modified in a very few instances by a direct cross with the Chinese and Neapolitan strains. But while these latter-named varieties have unquestionably exercised some influence upon the types of swine as they have come to us from our English cousins, yet they have in no case been retained as distinctive breeds by practical farmers in the great pork-producing regions of the United States, as has been the case with most of the British breeds imported to this country, especially the

BERKSHIRES.

Undoubtedly the most universally popular and widely disseminated among all the breeds of swine is the Berkshire, a breed that takes its name — as so many others of our improved breeds of live stock have done — from the county in England where it originated; and like all others of our now popular breeds it has been greatly modified and improved since our earliest knowledge of its history. Originally they were described as a large, coarse breed, covered with

sandy or reddish-brown hair spotted with black, and Prof. Low, in his "Domesticated Animals of Great Britain," gives among his colored plates a typical Berkshire of that day (about 1840) showing the color as above described. Tradition gives, as the principal element which laid the foundation for the symmetrical, finely-formed Berkshires of today, a cross with the Siamese and China swine with the original Berkshire, by means of which cross and subsequent selections the breed has been refined and the color changed to the characteristic black, with pure white markings, as shown in our illustrations on pages 465 and 467.

The breed has been widely disseminated throughout the United States, and in the great corn and pork-producing regions fairly divides the honors with that purely American breed the Poland-China. The characteristics and markings of Berkshires, as agreed upon by the National Swine-Breeders' Convention, are as follows: "Color black, with white on face, tip of tail and an occasional splash of white on the arm. While a small spot of white on some other part of the body does not argue an impurity of blood, it is to be discouraged. White upon one ear, or a bronze spot upon some part of the body, argues no impurity, but rather a reappearance of original colors. Markings of white other than those named are objectionable. Face short, fine and well dished, broad between the eyes; ears generally almost erect, but sometimes inclining forward with advancing age, small, thin, soft, and showing veins; jowl full; neck short and thick; back broad and straight, or a very little arched; ribs long and well sprung; hams thick, round and deep, holding their thickness well back and down to hocks; tail fine and small, set on high up; legs short and fine, but straight and very strong,

with hoofs erect, legs set wide apart; size medium; length medium; bone fine and compact; hair fine and compact."

POLAND-CHINAS.

This widely popular breed of swine is essentially an American creation, having for its starting point the fertile Miami Valley in the State of Ohio. The swine of that region in the early settlement of the county were of various types, but were all large, coarse-boned, and slow in coming to maturity, and were variously designated as Russians, Bedfords, and Byfields. In 1816 John Wallace brought from Philadelphia to Miami County a boar and three sows called "Big Chinas," that were said to have been imported from China or bred from imported stock. Two of the sows and the boar were entirely white and the other sow was white with some sandy spots within which appeared smaller black spots. The characteristics of these swine that specially commended them were compact forms, early maturity, and the remarkable ease with which they were made fat. These were so highly appreciated that they and their progeny were crossed on the best stock of that region during the subsequent twenty years, the product becoming known as the Warren County hogs. About 1836 the Berkshires, that had been well known in New York for some years, were introduced into Warren County by Munson Beach. Between 1838 and 1840 William Neff, of Cincinnati, sent into the same locality from England some swine called "Irish Graziers," which were white with the exception of an occasional sandy spot about the eyes. These two breeds were crossed extensively with the descendants and crosses of the "Big Chinas" on other breeds, and the stock thus produced constituted the

basis of what is now known as the Poland-China. From the most authentic accounts obtainable it appears there has been no admixture of other blood with this breed since about 1840, and from that time to the present men with great experience and good judgment have bred them with a view to correcting defective points and giving them the very highest quality. There has been much discussion as to an alleged Poland or Polish cross in the formation of this breed, but it is now generally conceded that no such blood was ever introduced.

In the great pork-producing regions of the Western States the Poland-China alone contests the palm for supremacy with the Berkshire, and between these two breeds the honors are about equally divided. They have been very greatly improved within the recollection of the the writer hereof. Formerly they were of larger size and coarser-boned; the ears were much larger; they were slower in coming to maturity, and the white and black spots were more common than now, the two colors being in most cases very nearly equally blended. As now bred they are very similar in color to the Berkshires, but with rather more of white and the white markings not so regular in character. They are well haired, have good length, with short legs; broad, straight backs; deep sides, flanked well down on the leg; broad, square hams and shoulders; deep chests; short, full, high-crested neck; heavy quarters; short heads; fine muzzles and moderately fine and drooping ears. Although they have been greatly improved in the matter of fineness of bone, early maturity, and tendency to fatten at an early age, yet they still retain enough of their original character to entitle them to rank among the very largest known breeds of swine. Their popularity is not confined to

the United States, as they have been exported in considerable numbers to various foreign countries, where they appear to have given good satisfaction.

JERSEY REDS OR DUROCS.

This is a breed (at least it has come to be generally recognized as a breed in this country) concerning the origin of which but little is really known. It is claimed by many that it is derived from the original Berkshire, which half a century or more ago was frequently colored very much like our Jersey Reds—red or "sandy" with black spots—and Prof. Low's typical Berkshire, in his book on the "Domesticated Animals of Great Britain," is in almost every respect, color as well as form, a very fair picture of our modern Jersey Reds or Durocs. They have long been extensively bred in Salem, Binghamton, and the adjoining counties of New Jersey, where they have been called Jersey Reds. In other sections they have been variously known as Durocs, Saratoga Reds, and Red Berkshires. The Hon. Cassius M. Clay, of Kentucky, thinks they are of Spanish origin, and says: "When in Mexico I saw the 'Spanish' red hogs everywhere, and was much pleased with them. James B. Clay, Esq., son of Henry Clay, when Minister resident in Portugal (about 1848) imported some, calling them Spanish hogs, and gave me a pair. I distributed the progeny far and wide. The Spanish hogs had no doubt spread into the neighboring kingdom of Portugal and were carried into Mexico by the conquerors. The Berkshire Reds and Jersey Reds are no doubt the same, and the name ought to be 'Spanish' if they are so, but there may be other reds." In color they vary from a pale yellowish to a darker, brighter shade of red,

with irregular markings or spots of black; the ear is rather large and pendulous; snout of moderate length; head short; body long; legs long; hair thick and coarse; tail large, and bone rather coarse. It is claimed that they are much hardier than the more refined or finer-boned breeds. The compound Jersey-Duroc has been agreed upon as a common designation for the breed.

YORKSHIRES.

It is unquestionably true that throughout Europe the white breeds of swine are more popular than any other. In England they are classed simply as Large White, Middle White, and Small White breeds, without the distinctive appellations that are applied to the same swine when brought to this country. The original of all these varieties of white swine is believed to be the large, coarse white breed of Yorkshire, Lancashire, Cheshire, and the adjacent counties, which has been modified and broken up by selection and by the introduction of Chinese crosses until we have the Large York, the Middle York, the Cheshire, and what is known in this country as the Suffolk, all from substantially the same origin. The Large White breed, as now bred in England and extensively on the continent, is characterized by immense size — certainly one of the largest of breeds, if not the very largest — and it is believed that it is from this source that our own Chester Whites have obtained their great size. The best specimens of this breed, even when of immense size, are not the coarse animals one would expect to see; on the contrary the bone is no heavier than would appear to be essential to carrying such great weight, and the general appearance is rather fine than otherwise. The ears are of good size, pointing forward, but not drooping; the

snout is decidedly curved upward or "dished," and is not particularly fine; the skin is of a pinkish color, with an occasional bluish spot, but the hair is always white and moderately thick. The Middle White breed is well represented by our so-called Suffolks and Cheshires, and the Small White breed by our Small Yorkshires.

The Small Yorkshires are the smallest and finest of our white breeds, and are remarkable for their short heads; short, "dished" faces or snouts; short, thick jowls; long, heavy, deep bodies; short legs and remarkably fine bone. No breed matures earlier, is more docile, or fattens more quickly than the Small Yorkshire. The hair is always white, and rather thin; the skin a beautiful pink with the same tendency to an occasional bluish spot as is noticed in the other varieties of the Yorkshire. See illustration on page 475.

SUFFOLKS.

The so-called Suffolk of this country is a small white breed that originated in England, and is unquestionably only a variety of the Yorkshire, which has long been the leading white breed of swine in Great Britain. They are undoubtedly identical with what has frequently been called, in that country, the Middle-Yorkshire or York-Cumberland; in fact the varieties of swine which are or have been known in England as the Middlesex, the Coleshill, and the Prince Alberts or Windsors, as well as the Suffolks, are all clearly from the same stock. The Suffolks, as bred at Windsor Castle by the late Prince Albert, were great favorites in that country for many years, and were sometimes spoken of simply as the Windsor breed. They were first brought into prominent notice in this country by the importations of Messrs. Isaac and Josiah Stickney, of

Massachusetts; and although they are still bred to some extent in many portions of the United States, and are prized on account of their delicacy and early-fattening qualities, yet they have shared the unpopularity that attaches to all the white-haired breeds in the great pork-producing regions.

The characteristic markings of the Suffolk are as follows: Head small and very short; cheeks prominent; face dished; snout small and very short; ears short, thin, and upright; neck very short and thick, the head appearing almost as if set on front of shoulders; ribs well arched out from back; good length between shoulders and hams; flank well filled out and coming well down at ham; back broad, level, and straight from crest to tail; hams wide and full; legs small and very short, standing wide apart; bone fine; skin thin, of a pinkish shade; hair fine and silky; color of hair white, free from any spots or other color; size small to medium.

It may be well to mention that none of the white breeds are now known as Suffolks in England, the English Suffolk pig being uniformly black and very like the Essex.

CHESHIRES.

This is clearly another derivation from the famous old White Yorkshire of England. They have been extensively bred in Jefferson Co., N. Y., and from thence disseminated into various States, but in the hands of American breeders have not attained any great degree of uniformity. Many of them are of immense size, while others from the same stock are as small as the Suffolk, and much like the latter. They are usually very long in the body, with small but rather long heads; thin hair, pinkish skin; sometimes with blu-

ish spots in the skin, but hair always white; rather long legs, but bone always fine in proportion to weight of body.

CHESTER WHITES.

Mr. F. D. Coburn, in a series of articles on "The Breeds of Swine" published in Vol. I of the *Breeder's Gazette*, says: "The improvement of the common stock of Eastern Pennsylvania, especially in Chester County, which gave to the country the breed of swine known to all Americans as Chester Whites, or Chester County Whites, was begun nearly sixty-five years ago. A most prominent incentive to its beginning was the bringing to his farm, near West Chester, in 1818, by James Jeffries (who was a sea captain), of a pair of superior white pigs from Bedfordshire, Eng. The better class of farmers in the vicinity desiring something superior in the way of swine to what they were then raising, secured crosses of the Jeffries stock on their own. The former seems to have increased and multiplied to some extent, and the progeny continued to be bred on and with the original stock of the county until, in the course of years, its swine had much more than a local reputation for both size and quality, and wherever mentioned were spoken of as the Chester County stock. In Pennsylvania, where best known, they have always been held in the highest esteem, notwithstanding the fact that various other breeds have from time to time been introduced there, notably the Berkshires, some forty years since; and later, the Suffolks, which, in turn, were followed by the Essex; but none of them became favorites to the extent of seriously displacing the home breed. In form, size, and general characteristics, except color, they are very similar to the Poland-Chinas; but for

some cause they have not retained the popularity of a dozen years ago among the pork-producers of the corn-growing States, where the dark-haired hogs are generally preferred. They are among the largest breeds known; individuals having attained the enormous weight of 1,300 lbs. The following is a description of their characteristics: Head short, and broad between the eyes; ears thin, projecting forward and drooping at the point; neck short and thick; jowl large; body long and deep, broad on the back; hams full and deep; legs short and well set under; hair thin, white, and if a little wavy not objectionable."

ESSEX.

The Essex is one of the English breeds. Youatt describes them as a "parti-colored animal; black, with white shoulders, nose, and legs —in fact, a sort of sheeted pig; large, upright, and coarse in bone."

The first determined effort at improvement in the breed is credited to Lord Western, who introduced Neapolitan swine that were said to have possessed "very peculiar and valuable qualities, the flavor of the meat being excellent, and the disposition to fatten on the smallest quantity of food unrivaled." This pair and their offspring were bred together to such an extent that there was danger of their becoming extinct, when they were crossed on the Essex on Lord Western's estate with the effect of obliterating the white and producing a progeny with the appearance and many characteristics of the pure Neapolitans. This crossing and the subsequent selection and breeding which formed the type of the modern Essex was mainly the work of Fisher Hobbs, who was a tenant on the Western estate, and as bred by him they have been regarded as a

fixed breed in England since 1840. They are classed with the small breeds, but frequently attain weights that would entitle them to be considered among the larger ones, often weighing 400 to 600 lbs. at maturity, though usually most profitable when slaughtered young for breakfast-bacon or family use, for which they are highly esteemed.

The standard agreed upon is as follows: Color black, without any white whatever; face short and dishing; ears small, soft, and standing erect while young, but drooping slightly with increasing age; carcass long, broad, straight, and deep; ham heavy and well let down; bone fine; hair ordinarily rather thin; fattening qualities very superior.

The breed has not become generally popular in the United States, but has been highly esteemed as a cross with the coarser-boned and more slowly-maturing varieties.

NEAPOLITANS.

It is believed that this breed was first introduced into this country about the year 1840 by Mr. James G. King, who made an importation from Naples to Hudson County, N. J.; and ten years later by Mr. Chamberlain, of Dutchess County, N. Y., who made an importation from Sorrento. About the same time, or perhaps about 1848, quite a number of swine of this breed were taken into Union County, O., by Samuel Long, where the writer hereof often saw them. They may be described as follows: Head small but rather long; forehead bony and flat; face slightly dishing; snout rather long and very slender; ears small, thin, standing forward nearly horizontally, and quite lively; jowls very full; neck short, broad and heavy above; trunk long and round; back flat, and ribs arching,

even in low flesh; belly horizontal on the lower line; hind quarters decidedly higher and heavier than the fore; legs very fine, the bones and joints being smaller than those of any other breed; tail fine, curled and fringed with hair on each side; general color slaty or bluish plum color, with a cast of coppery red; skin soft and fine, nearly free from hair, which when found upon the sides of the head and behind the fore legs is a reddish black, soft and rather long.

CHINESE SWINE.

The swine frequently spoken of among breeders in this country and Great Britain as the Siamese breed is also often alluded to as the Chinese. In fact, although there are several breeds of swine in the eastern part of Asia, especially in the kingdom of Siam and the Chinese Empire, yet there is a great similarity among them, and those that have been imported to the United States and Great Britain—sometimes called Chinese and again Siamese swine—have been substantially of the same breed. They are distinguished by their small size, round bodies, somewhat hollow in the back, with the belly trailing near the ground in consequence of the extreme shortness of their legs. They vary in color from pure black to pure white, with various mixtures of the two colors. The ears are short, small and erect; the bone is fine, legs very short, body long, and they fatten rapidly on a very small quantity of food, maturing at a very early age. They are less hardy and prolific than the English breeds, and have been valuable to us only as a cross for the coarser types. In fact it is doubtless true that the great improvement that has been made in the swine of Great Britain during the past hundred years has been more largely due to the introduction of this Asiatic

blood than to any other one cause. Certainly, in the matter of early maturity and fineness of bone, this Asiatic cross has exerted a most powerful influence upon all the English breeds.

RECORDS AND HERD BOOKS.

Coburn's "Swine Husbandry," "Harris on the Pig," and Long's "Book of the Pig" may be profitably consulted for more specific and detailed information touching the breeds of swine. The following is a list of the records for the various breeds that are published, with the name and address of the party in control of each:

Berkshires.—American Berkshire Record, Phil M. Springer, Springfield, Ill.

Poland-Chinas.—American Poland-China Record, John Gilmore, Vinton, Ia. Central Poland-China Record, W. H. Morris, Indianapolis, Ind. Ohio Poland-China Record, Carl Freigau, Dayton, O.

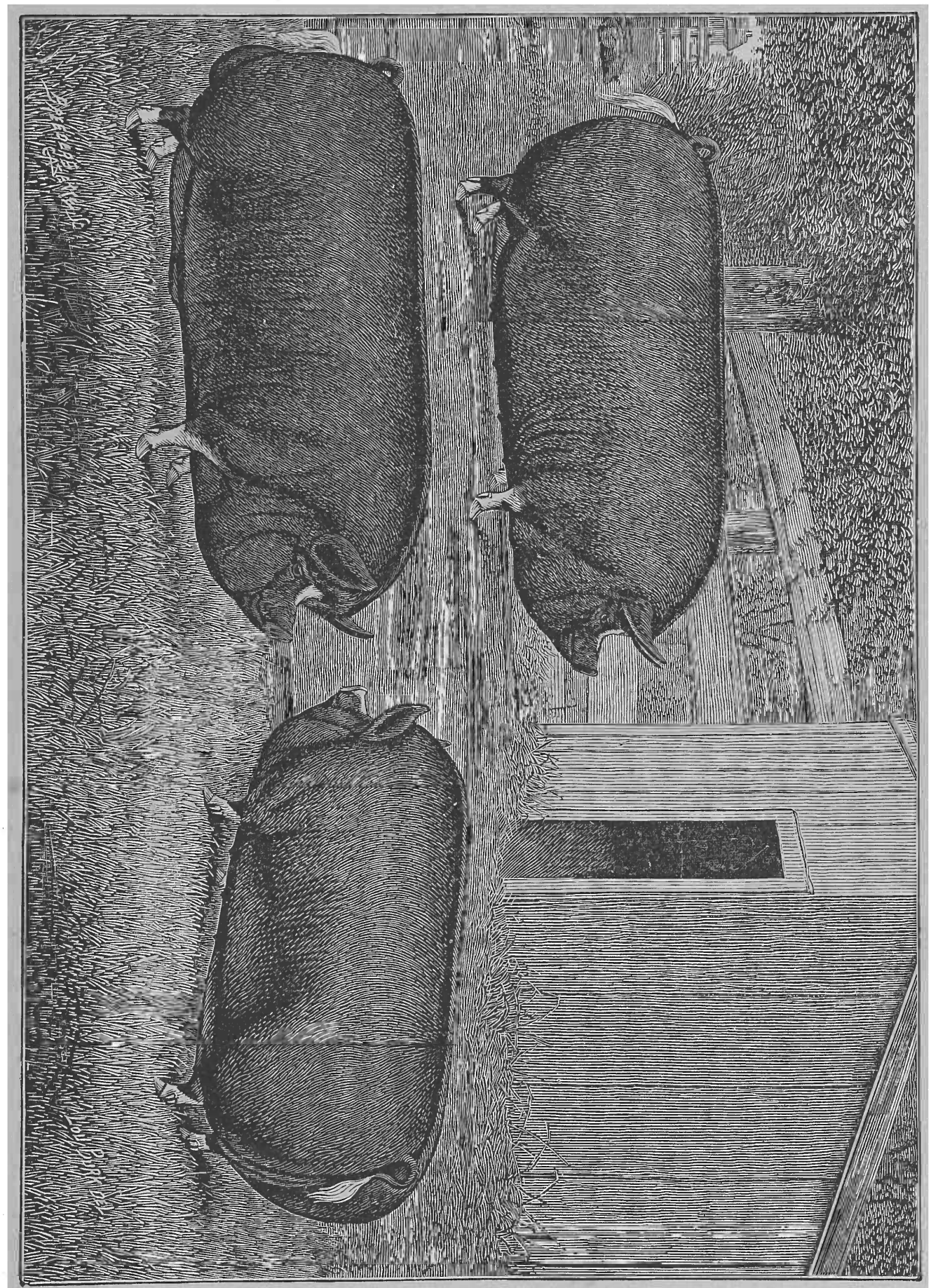
Yorkshires.—American Yorkshire Record, George W. Harris, Station R, New York city.

Chester Whites.—National Chester White Record, E. R. Moody, Eminence, Ky.

Duroc-Jerseys.—Duroc-Jersey Swine Register, C. H. Holmes, Grinnell, Ia.

GROUP OF BERKSHIRE SWINE.

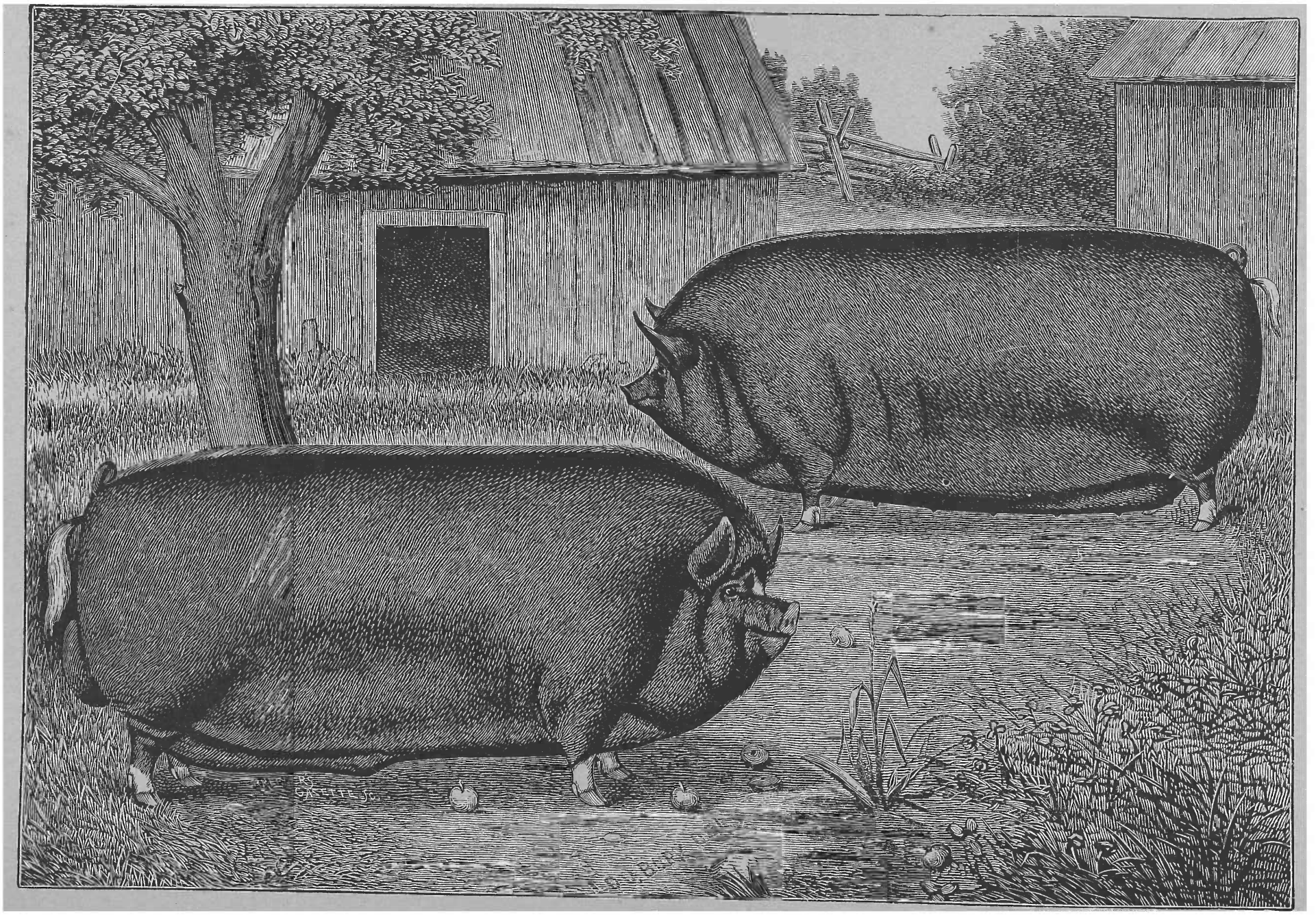
The illustration on the opposite page shows a boar and two sows of the Berkshire breed, sketched from life by Burk from the herd of George W. Penny, a well-known swine-breeder of Newark, O. The boar is Royal Gloster 10195, of the American Berkshire Record, by King Biot 4011, out of Chloe 9434. The sow in the background is Juliette 10193 by Exor 3891, out of Lady Kingscote 3d 10192; and the other sow is Queen Mab 10194 by Exor 3891, out of Lady Kingscote 2d 8034. They were all bred by the executor of the estate of Arthur Stewart, of England, and were imported by their present owner, as above mentioned. In form and marking they may be fairly considered thorougly typical Berkshires. See page 451 for description and history of the breed.



59

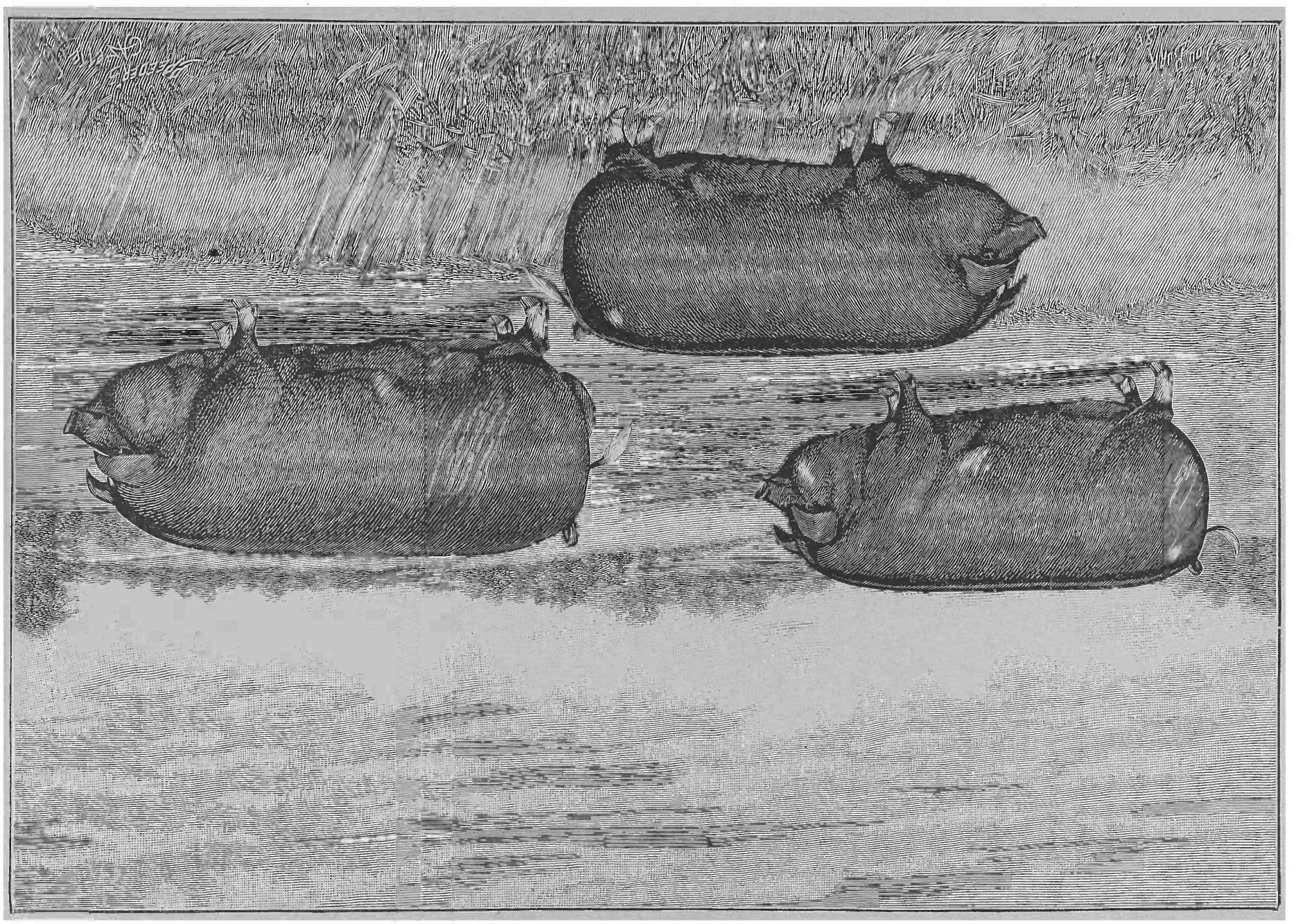
BERKSHIRE BOAR AND SOW.

The engraving facing herewith is a masterly reproduction of the Berkshire boar Sovereign Duke 3819, and a fairly good picture of the sow Manhattan Pride 3d 8586, owned by A. W. Rollins, an extensive and well-known breeder of Manhattan, Kan.; and the engraving was so highly thought of among Berkshire breeders that it was used as the frontispiece to Vol. VI of the American Berkshire Record. The boar was bred by N. H. Gentry, of Sedalia, Mo.; got by his famous stock boar Sovereign 2d 1757, out of Rival Duchess 6706. The sow was bred by Mr. Rollins, as above, and was by his boar The Prophet 2663, out of Manhattan Pride 6940. Both have been greatly distinguished as prize-winners at leading Western fairs. See page 451 for history and description of the breed.



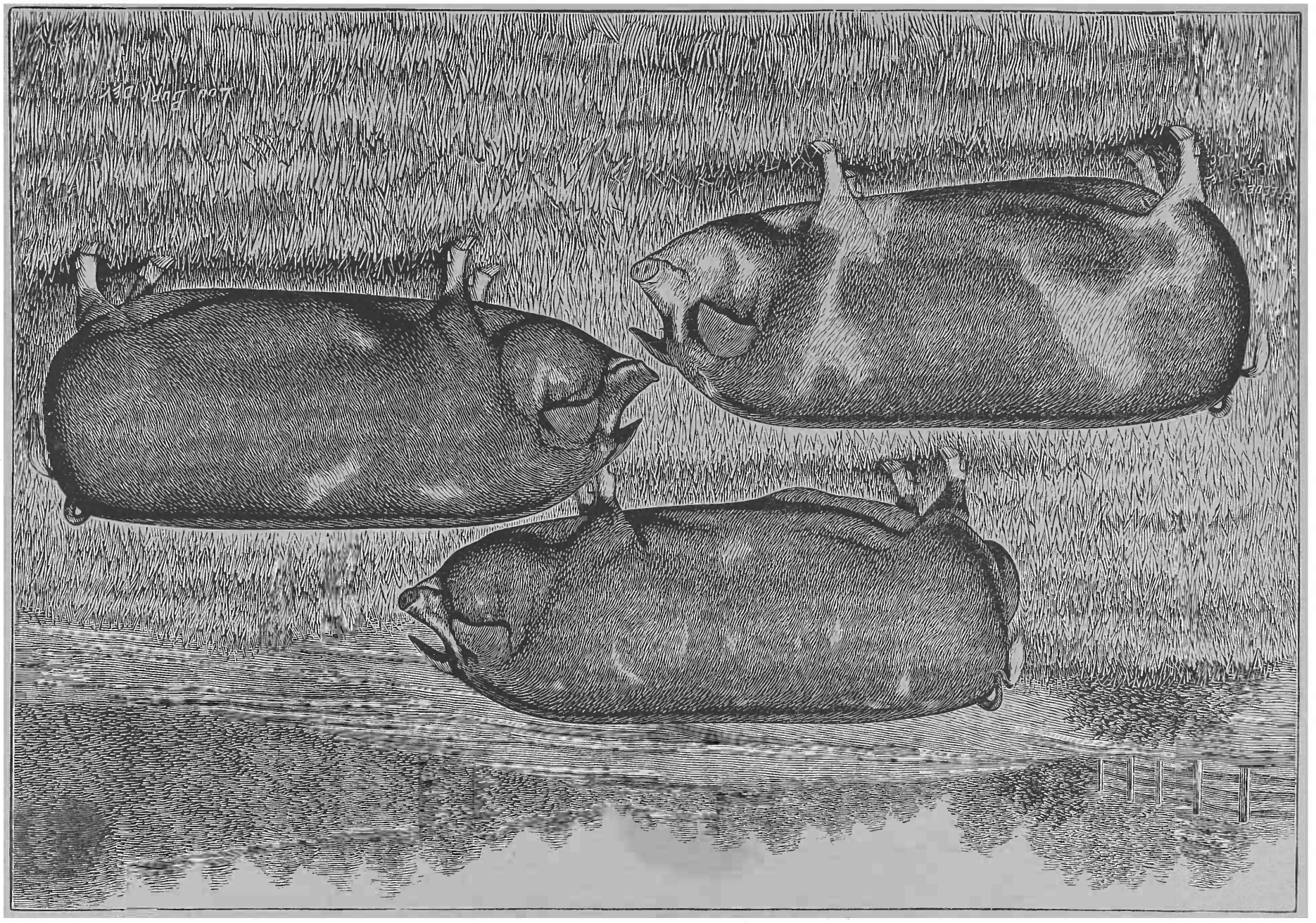
GROUP OF POLAND-CHINA SWINE.

The peculiar characteristics of the Poland-China breed of swine are faithfully portrayed in the engraving shown herewith. The group consists of the boar Joe Richland 2163, the sow Helen's Beauty 10652 (in front), and Fannie Harkrader 3d 10352, sketched by Burk after an original drawing by Freigau from the well-known herd of Messrs. H. M. & W. P. Sisson, Galesburg, Ill., to whose good judgment and rare skill in breeding a great measure of the improvement that has been wrought in this popular breed during the past thirty years is due. Their Beauty family has been especially famed for the success of its representatives in the show ring for the past twenty years. See page 453 for a full description of the breed and history of its origin.



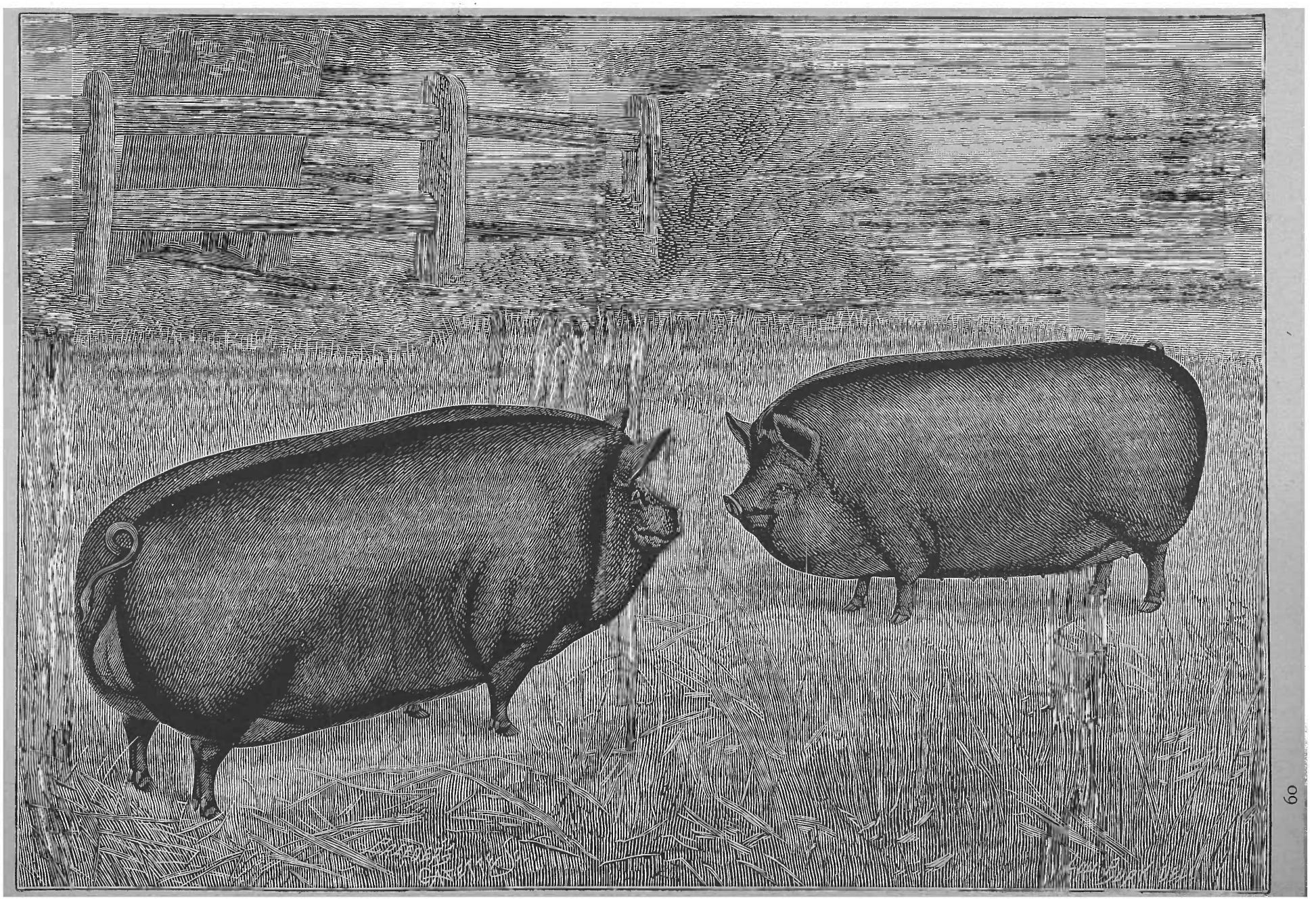
GROUP OF YOUNG POLAND-CHINA SWINE.

To those who have been frequenters of the leading fairs and stock shows of the great pork-producing States during the last twenty years there has been no more familiar sight in connection with the swine exhibits than the collection of Poland-China swine shown by A. C. Moore, of Canton, Ill. While not one of the very earliest among the improvers of this breed, yet Mr. Moore's experience dates far back toward its beginning, and it is doubtful if any man now living has been more thoroughly identified with the interests of this breed from its earlier stages, or has done equally as much to make its merits known to the public. Our engraving shows a boar and two sows at about six months old, sketched by Burk, from the herd of A. C. Moore & Son, at the Illinois State Fair, in Peoria, September, 1882. For particulars concerning this breed see page 453.



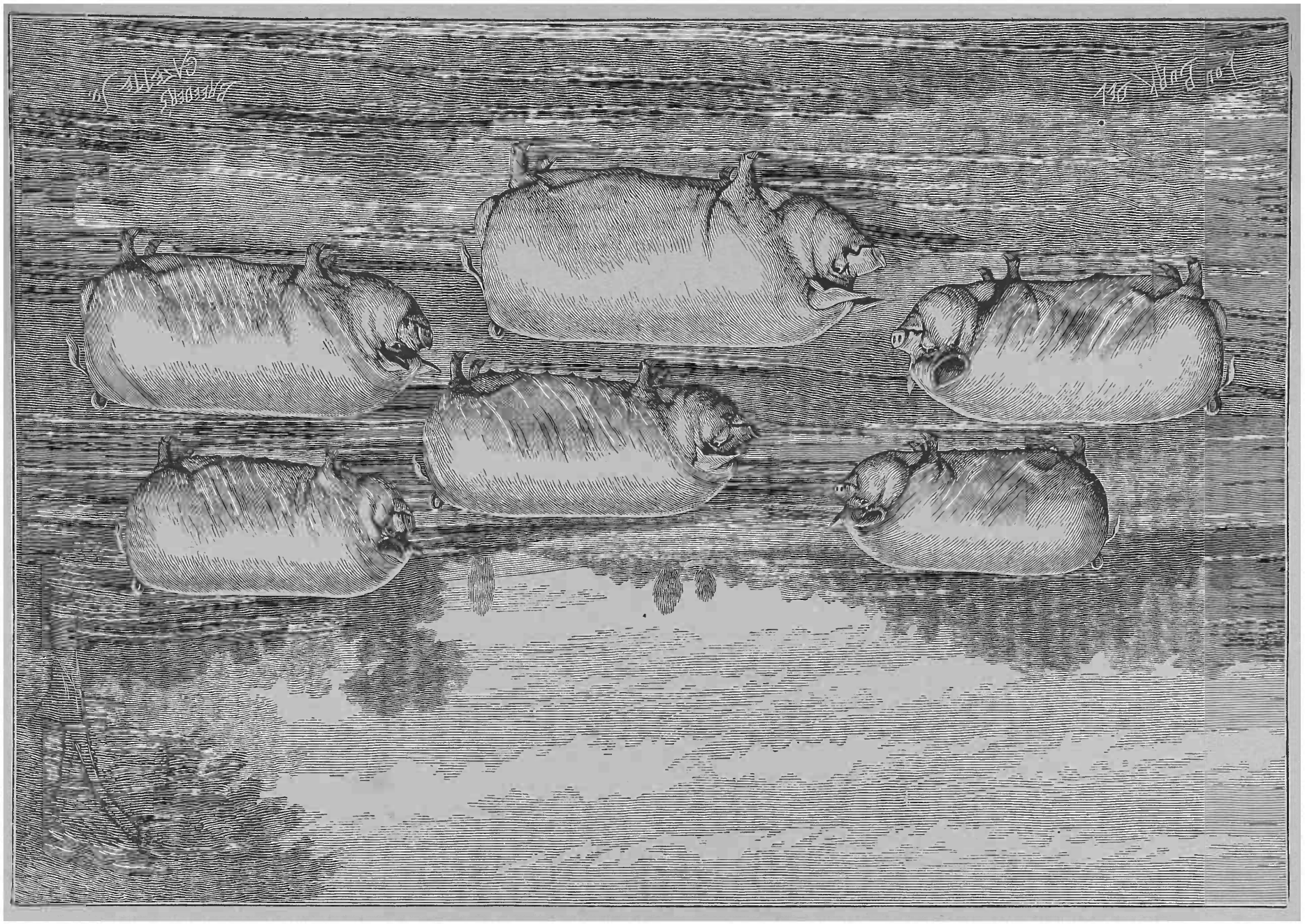
ESSEX BOAR AND SOW.

This engraving, sketched by Burk from the herd of W. J. Neely, Ottawa, Ill., who has maintained for many years a herd of purely-bred Essex swine, is a good illustration of typical animals of the breed. For description and history see page 460.



SUFFOLK, CHESTER WHITE, AND SMALL YORKSHIRE SWINE.

The white breeds are very fairly typified in the engraving on the opposite page. In the center are shown a pair of Chester Whites, the largest of our white breeds; on the left is a pair of Suffolks, which in everything except color might well pass for typical Berkshires; and on the right are a pair of Small Yorkshires. The characteristics of these several breeds are described on pages 456, 457 and 459 of this volume.



GENERAL INDEX.

PAGE

Aberdeen-Angus cattle 295, 325
Accidental variations 23
  Transmissible 26
Adaptation to changed conditions 15
  To locality 16
Alderney cattle 385
Altitude, effect of 22
Atavism 14, 29
Ayrshire cattle 413, 419

Bakewell as a breeder 11
Berkshire swine 451, 465, 467
Boulonnais horses 194
Breed, definition of 32, 33
Breeding for sex 72
  General principles of 9
  In and in 37
    Contradictions of explained 44
  Darwin on 42
  Effect of on hardiness 47
  Galton on 39
  Herbert Spencer's views on 41, 45
  How far may be practiced 49
  Tendency of 37, 38
  When not dangerous 45, 46
Breeds formed by selection 33, 34
  How formed 32, 33
  Modified by locality 16
  Modified by temperature 17
Breeds of Cattle 203, 424
  Aberdeen-Angus 291
  Alderneys 385
  Ayrshires 413
  Devons 333
  Galloways 325
  Guernseys 385
  Herefords 249
  Holstein-Friesians 353
  Jerseys 385
  Kerry 421
  Red Polled 345
  Short-horns 203
  Sussex 335
  Swiss 422
  Texans 422
  West Highlanders 421
Breeds of Horses 77, 199
  Boulonnais 196
  Cleveland Bays 117
  Clydesdales 151
  English Shire 133
  French Coach 117
  Orloffs 96

PAGE

  Percherons 173
  Thoroughbreds 77
  Trotters 91
  Mustangs 197
  Ponies 196
  Suffolk Punch 195
Breeds of Sheep 425, 450
  Cheviots 436
  Cotswolds 427
  Hampshire Downs 434
  Leicesters 429
  Lincolns 430
  Merinos 425
  Oxfords 431
  Shropshire Downs 435
  Southdowns 432
  Records and Registers of 436
Breeds of Swine 451, 474
  Berkshires 451
  Chester Whites 459
  Cheshires 458
  Chinese 462
  Durocs 455
  Essex 460
  Jersey Reds 455
  Neapolitans 461
  Poland-Chinas 453
  Siamese 462
  Suffolks 457
  Yorkshires 456
  Records and Registers of 463

Canadian horses 18
Cattle, the breeds of 203, 424
Changed conditions, adaptation to 15
  Effect of 11, 15, 22
Change of climate, effect of 11, 18
  On the generative organs 71
Cheshire swine 458
Chester White swine 459, 475
Clay family of trotters 92
Cleopatra, in-breeding illustrated by 35
Chinese swine 462
Climate, effect of on the generative organs 71
  Influence of 11, 17, 18
Cleveland Bay horses 117, 127
Clydesdale horses 151
Coach horses 117, 120
Color influenced by imagination 68
  Markings from fright 69
Controlling the sex 72
Cotswold sheep 427, 441
Cross fertilization 24

	PAGE
Crosses, top most important	50
Violent, effect of	40
Crossing and in-breeding	37
Dam and sire, relative size of	52
Darwin on in-breeding	42
On reversion	15
Definition of terms	31, 35, 36
Development affected by food and climate	12
Devon cattle	333
Duroc swine	455
Dwarf breeds produced by climate	12
English Shire horses	133
Essex swine	460, 472
Evolution, effect of on heredity	27
Family, value of	10
Fertility affected by in-breeding	39, 43
Affected by violent crosses	39, 43
First impregnation, influence of	55, 58
Prof. Law on	55
Formation of breeds	31
French coach horses	120
Galloway cattle	325
Galton on in-breeding	39
General principles of breeding	9
Generative organs, effect of change of climate upon	71
Good pedigree, what is a	51
Guernsey cattle	385
Hambletonian family of trotters	92
Hampshire Down sheep	444, 447
Hereford cattle	249
Hereditary influence, extent of	27
How far may be depended on	30
Hereditary qualities, transmission of	9
Highland cattle	421
Holstein-Friesian cattle	353
Horses, the breeds of	77, 199
Humidity, effect of	18
Imagination, effect of on color	68
Impregnation, influence of first	55
In-breeding	37, 47
Individual quality, transmission of	30
Inheritance in the human family	10
Influence of first impregnation	55
Jersey cattle	385
Jersey Red swine	455
Kerry cattle	421
Leicester sheep	429, 441
Lincoln sheep	430, 441
Mambrino family of trotters	492
Markings from imagination	58
Merino sheep	425, 439
Morgan horses	93
Mustangs	195
Neapolitan swine	461
Orloff horses	96
Oxford sheep	431, 443
Pedigree in the human family	10
Tests of	51
Value of	50
Percheron horses	173
Pilot family of trotters	94
Poland-China swine	453, 469, 471
Ponies	194
Principles of breeding	9
Red Polled cattle	345
Relative size of sire and dam	52
Reversion to original type	13
Russian trotters	96
Sheep, breeds of	425, 449
Records and registers of	436
Siamese swine	462
Southdown sheep	432, 445
Shropshire Down sheep	435, 449
Sussex cattle	335
Swine, breeds of	451, 473, 475
Records and herd books	463
Swiss cattle	422
Sex, controlling the	52
Shetland ponies	196
Shire horses	133
Short-horn cattle	203
Size of sire and dam, relative	52
Sports	23
Suffolk swine	457, 465
Suffolk Punch horses	195
Temperature, effect of	1, 8
Thoroughbred horses	77
Transmission of accidental qualities	25
Individual character	30
Trotting horses	91
Texan cattle	422
Uniformity of type	11
Transmitted	28
Variations, accidental	23
Transmissible	26
From uniformity, cause of	11
Violent crosses, effect of	40
West Highland cattle	421
Yorkshire swine	456, 475

INDEX TO ILLUSTRATIONS.

HORSES.

CLEVELAND BAYS: PAGE
- Competitor ... 125
- Dalesman 2d ... 127
- Royalty ... 129

CLYDESDALES:
- Bide a Wee ... 159
- Darling's Prince ... 161
- Darling 12th ... 165
- Leoline ... 167
- Music ... 157
- Prince George of Wales ... 157
- Princess ... 169
- Turn o' Luck ... 163
- Lady of the Lake ... 171

ENGLISH SHIRES:
- Beau Nash ... 139
- Ben Lomond ... 147
- Blythe Ben ... 145
- Holland Major ... 143
- Honest Tom ... 137

FRENCH COACH:
- Superbe ... 131

PERCHERONS:
- Brilliant ... 179
- Cesar ... 189
- Cheer ... 191
- Cheri ... 181
- Conde ... 187
- Gladiateur ... 183
- Group ... 183
- Dolphin and foal ... 185

SHETLAND PONIES:
- Group (Wilcox & Liggett's) ... 201
- Group (Eli Elliott's) ... 199

THOROUGHBREDS ... 77
- Hyder Ali ... 89
- Leonatus ... 87

TROTTERS:
- Doc Vail ... 113
- Don Cossack ... 109
- Fairy Gift ... 111
- Herod ... 105
- Maud S ... 101
- Phallas ... 103
- Trinket ... 107
- Wilkomont ... 115

CATTLE.

ABERDEEN-ANGUS: PAGE
- Beauty of Hillhurst and calf ... 307
- Blackbird of Corskie 2d ... 319
- Black Prince ... 323
- Bruce's Queen ... 317
- Coquette 4th ... 305
- Edelweis ... 299
- Eila ... 299
- Electra ... 299
- Elizabeth and calf ... 313
- Equity ... 299
- Equinox ... 299
- Errant Knight ... 321
- Eugenia ... 299
- Group of calves ... 315
- Guido ... 303
- Judge ... 301
- Model Prince ... 311
- Paris 3d ... 309
- Young Viscount ... 299

AYRSHIRES:
- Alice Douglas ... 417
- Gerta 4th ... 419

DEVONS:
- Carlos ... 337
- O K Boy ... 339
- Wisconsin Belle and calf ... 339

GALLOWAYS:
- Crusader ... 329
- Group of cows ... 331

GUERNSEYS:
- Rosebud of Les Vauxbelets 4th and calf ... 409
- Sir Champion 13th ... 411

HEREFORDS:
- Anxiety 3d ... 267
- Archibald ... 261
- Beau Real ... 275
- Cassio ... 271
- Dysart ... 289
- Emerald 2d ... 283
- Grace ... 285
- Henrietta 3d ... 283
- Hesiod ... 269
- Lady Love ... 283
- Lord Devere ... 279
- Lovely 2d ... 281
- Prince Edward ... 277

PAGE

Regulus 287
Royal Grove 273
Sir Bartle Frere 265
The Grove 3d 259
Washington 263

HOLSTEIN-FRIESIANS:

Aaggie family (group) 359
Duchess of York (group) 383
Empress 371
Imogene 369
Lady Fay 373
Lady of Jelsum 381
Mercedes 365
Mooie 3d 379
Netherland family (group) 363
Princess of Wayne 3d 367
Royal Aaggie 375
Susie Clay 377
Violet family (group) 361

JERSEYS:

Belle of Collingwood 407
Bull calf 407
Belmeda 399
King of Ashantee 403
Mary Anne of St. Lambert 395
Nancy Lee 397
Nancy Lee 2d 397
Oxford's Kate 393
Peoria Chief 405
Princess 2d 391
Quaker Girl 407
Royalist 3d 401

RED POLLED:

Duchess of Iowa 349
Hawkeye 349
Prime Minister 351
Slasher 2d 349

SHORT-HORNS:

Baron Victor 231
Benvenuto's Booth 215
Cleveland 241
Countess Bickerstaff and calf 225
Dick Taylor of Glenwood 227
Double Gloster 235
Duke of Underley 211

PAGE

Eleventh Duke of Athol 237
Fourth Duke of Clarence 219
Grand Duchess of Gloster 6th and 10th .. 235
Grand Duke of Gloster 235
Golden Thistle 213
Highland Flower 211
McMullin 247
Rose of Richland 61st, 64th, and 65th .. 229
Schooler 241
Show Herd (Croft's) 232
Tenth Duchess of Geneva 211
Thirty-third Duke of Airdrie 233
Tom Brown 245
Von Tromp 221
Water Sprite 239
Group of calves (Hamilton's) 217

SUSSEX:

General Roberts 343
Milk Maid 3d 343
Rose Dew 15th 343
Sussex bull 341

TEXANS:

Group 421

SHEEP.

Cotswold ram 441
Hampshire Downs 447
Leicester ram 441
Lincoln ram 441
Merinos (group) 439
Oxfords (group) 443
Shropshire Downs (group) 449
Southdown ram Baron Thetford 445
Southdown ewe Penelope 4th 445
Southdown ewe Belle of Boskymead 445

SWINE.

Berkshire group (Penny's) 465
Berkshire group (Rollins') 467
Chester White boar and sow 475
Essex group (Neely's) 473
Poland-China group (Moore's) 471
Poland-China group (Sisson's) 469
Suffolk boar and sow 475
Small Yorkshire boar and sow 475

SIBi
SISTEMA INTEGRADO DE BIBLIOTECAS
UNIVERSIDADE DE SÃO PAULO

USP

ORIENTAÇÕES PARA O USO

Esta é uma cópia digital de um documento (ou parte dele) que pertence a um dos acervos que fazem parte da Biblioteca Digital de Obras Raras e Especiais da USP. Trata-se de uma referência a um documento original. Neste sentido, procuramos manter a integridade e a autenticidade da fonte, não realizando alterações no ambiente digital – com exceção de ajustes de cor, contraste e definição.

1. Você apenas deve utilizar esta obra para fins não comerciais. Os livros, textos e imagens que publicamos na Biblioteca Digital de Obras Raras e Especiais da USP são de domínio público, no entanto, é proibido o uso comercial das nossas imagens.

2. Atribuição. Quando utilizar este documento em outro contexto, você deve dar crédito ao autor (ou autores), à Biblioteca Digital de Obras Raras e Especiais da USP e ao acervo original, da forma como aparece na ficha catalográfica (metadados) do repositório digital. Pedimos que você não republique este conteúdo na rede mundial de computadores (internet) sem a nossa expressa autorização.

3. **Direitos do autor**. No Brasil, os direitos do autor são regulados pela Lei n.º 9.610, de 19 de Fevereiro de 1998. Os direitos do autor estão também respaldados na Convenção de Berna, de 1971. Sabemos das dificuldades existentes para a verificação se uma obra realmente encontra-se em domínio público. Neste sentido, se você acreditar que algum documento publicado na Biblioteca Digital de Obras Raras e Especiais da USP esteja violando direitos autorais de tradução, versão, exibição, reprodução ou quaisquer outros, solicitamos que nos informe imediatamente (dtsibi@usp.br).