BRETT'S
COLONISTS' GUIDE
AND
CYCLOPÆDIA
OF
USEFUL KNOWLEDGE

PREFACE.

THE present work is issued in response to numerous requests from all parts of New Zealand. The first edition of 5,000 copies was disposed of several years ago, and many gratifying letters from settlers who have derived help and guidance from its pages assure the publisher and editor that the book was widely appreciated and has been of real service.

Only the great labour involved in the task has delayed the issue of a new edition, long promised. It was felt that the advance of knowledge, the wider experience of colonial needs, and the changed conditions of the colony, demanded something more than a revision. Practically, this is a new book, preserving all that was valuable in its predecessor, but adding abundantly to the stores of knowledge contained in the first edition, and branching out into new departments.

A reference to the sections devoted to The Farm, Sheep, The Orchard, Poultry, and Veterinary, will show how much more exhaustive the treatment of these subjects is in the Second Edition than in the First. Although a considerable amount of matter of minor importance has been eliminated, the volume has swelled in bulk from 830 to 1208 pages.

Practical usefulness, absolute accuracy, simplicity, and lucidity in all directions and explanations, and the avoidance of technical terms; these are the characteristics which the various contributors have endeavoured to stamp upon all their work.

The Medical Section was prepared specially for the guidance of the isolated settler, and its prescriptions are simple and safe.

The Mining Sections, including practical hints to prospectors and a synopsis of mining laws, will assist those who are engaged in promoting the development of the mining industry.

The Synopsis of Laws is revised up to the latest date.

Cordial acknowledgment is made of the assistance rendered by Mr. J. D. Ritchie, Secretary of the Department of Agriculture, who placed at our disposal a number of electro. blocks, illustrating the leaflets issued by the Department.

To our many experienced contributors a meed of praise is due for the efficient manner in which they carried out the work entrusted to them.

An immense amount of material was carefully sifted and condensed in preparing each section, and the book is now sent forth with a feeling of confidence that it will not disappoint those who systematically consult its pages.

AUCKLAND,
FEBRUARY, 1897.

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large extent, do away with the unemployed difficulty in the country. The preparation of the soil and method of cultivation are the same as for mangel wurzel, which is a variety of the species.

The following fundamental rules are generally accepted by European growers:—That the diminution of sugar in the beet is in proportion to the increase in weight of the roots. That roots of 2lbs. weight, grown on a congenial soil, will give the greatest amount of sugar. That beets grown in calcareous soil average more sugar than those raised in clayey or sandy soil, or in soils containing a small amount of calcareous matter. The fermented pulp of the roots, is, in conjunction with hay or chaff, splendid fattening food for stock. The refuse pulp is also an excellent manure for the beet crop, and is cheaper than any other suitable manure. Beet root is a very exhaustive crop and requires to be well manured. In Europe compost and gypsum is largely employed for the purpose. When farmyard manure is used it is not advisable to apply it at the time of sowing, as the roots are liable to become forked in consequence. Good seed is a very important matter, and a crop grown from degenerated seed is oftentimes worthless owing to plants "sporting" as sometimes happens with turnips and swedes. About twelve years ago experiments in beet-root growing were carried out in the Waikato district (Auckland), and analysis of various samples of roots grown there was made by an analytical chemist, who reported that the average percentage of sugar in the well grown roots was 12·45, a result which would be considered extremely satisfactory from a manufacturer's point of view, and would prove very profitable to the growers, if a demand existed for the roots. £13 7s. 6d. is the estimated cost of growing and delivering at factory of a 20-ton crop of beet root per acre. It can never be grown in Britain while the present bounty system is maintained upon the Continent. In Germany last year the bounty paid to home-grown beet amounted to £885,000, whilst in France it was upwards of £3,000,000.

BOYS; HOW TO ATTACH TO FARM LIFE.—We often hear complaints of a growing tendency of farmers' sons to prefer town life to the drudgery and dirt of the farm. The fact of the matter is that boys are too generally treated as mere machines for carrying out certain routine duties, day after day, and year after year, instead of being led to take an intelligent interest in their work, and encouraged to take notice of all that goes on around them. If a boy is interested he will become observant, and endeavour to ascertain and understand how and why certain operations are performed. The best way to arouse a boy's interest, and engender a love of the country and farm work is to let him have something of his own to be placed under his special charge, such as a plot of garden ground to cultivate, a heifer to break in, or a young horse to train. Even the planting of a fruit-tree of his very own, to be pruned, dunged, and cared for by himself alone, is a good thing, and bends a boy's habits in the right direction. He should always be allowed to dispose of the proceeds of his own little property for his sole use and benefit, and encouraged to invest his earnings, and gradually enlarge the scope of his operations. The proceeds of his garden plot, or his apple tree, should, for example, buy him a sheep; the returns from his sheep procure him a heifer; and this, again, enable him to invest in a young horse, and so on. Another important matter is that of leading him to act and think for himself, not to become conceited or obstinate under proper authority, but to learn to have some confidence in using his own judgment, and so be accustomed to undertake a certain amount of responsibility when the proper time arrives. Many boys are so blindly accustomed to act under others without exercising their own faculties of thought and observance that they are quite at a loss, and perfectly helpless, when thrown upon

their own resources in any way. Many young men, sons of sensible farmers, are good and capable farm labourers ; but when it is necessary to think or plan for themselves, or to undertake the management of any matter they fail utterly, just from want of confidence in their own ideas and judgment. Therefore, lead the boys to observe, and think, and ask sensible and reasonable questions, so that they may know and understand the why and the wherefore of all that is done upon the farm.

BREAK THE CRUST.—After a garden plot or field of corn has been worked to a fine tilth, and left some time, a thin crust or cake forms upon the surface, and it is very necessary that this crust should be broken by frequent stirring. Gardeners say that nothing assists the retention of moisture, and promotes growth so much as attention to this matter of frequently hoeing and stirring the soil ; and what is true of gardening must hold good in farming, for farming is, or should be, nothing but gardening upon an extended scale. Jethro Tull was a strong and persistent advocate of much stirring of the soil by means of horse hoe, etc., and maintained that thorough cultivation, both before and after sowing, was sufficient as a substitute for manure. Autumn or winter-sown wheat always has a crust upon the surface in the spring in consequence of the beating of the winter rains, and the crop cannot possibly thrive without a stroke of the harrows to break up the crust, and permit air and moisture to penetrate the soil.

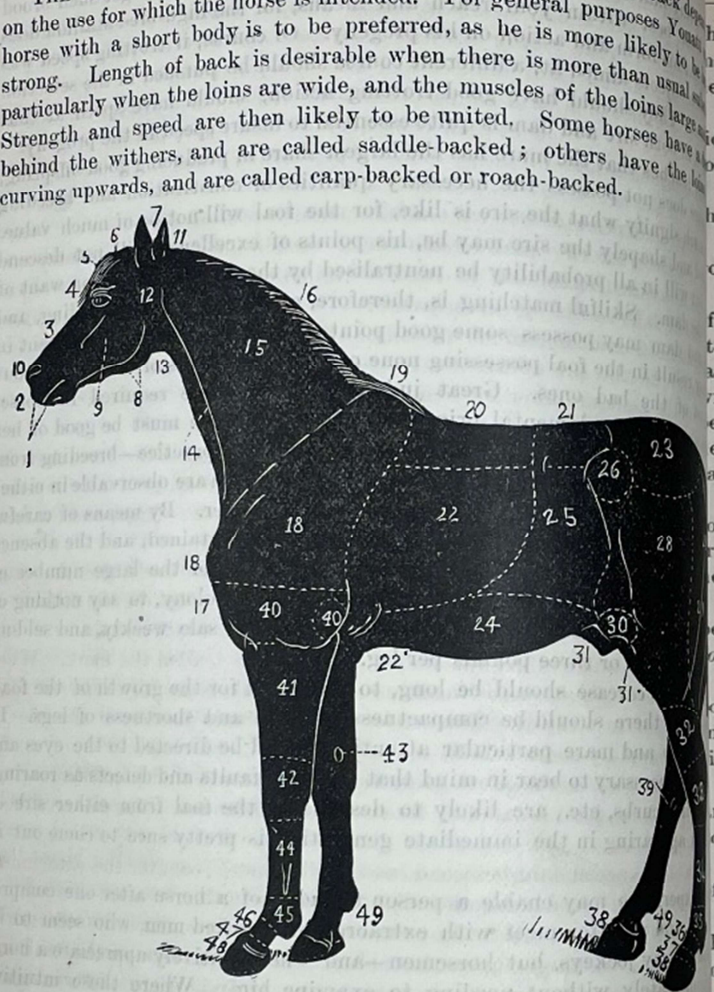
BROOM CORN.—The northern districts of the colony are well adapted for the production of this crop ; and if it can be made profitable there is every reason that it should receive attention. The greater variety of products the better for the growers and for the country in general ; but, as a rule, farmers are very shy of adopting any addition to the ordinary round of crops to which they have been accustomed. Broom corn is largely grown in America, and the manufacture of brooms and whisks forms a very extensive industry. The seed is excellent food for poultry, horses, pigs, etc. Like rice, Indian corn, and other sub-tropical products, broom corn delights in a deep rich loam, such as are termed in the States "bottom land," being deep alluvial deposit. It also requires careful cultivation and frequent hoeing. The crop grows about 12 or 15 feet high, and is rather difficult to harvest and thresh ; but as a profit of about £10 an acre is possible with a good crop, those farmers who possess suitable land in the Auckland district may grow it with advantage.

BUCKWHEAT.—The seed of this plant is similar to the seed of the beech tree (beech masts), and the name is a corruption of the German name of the beech mast. The seed is rich in gluten, and the flour makes superior pastry and confectionery. In Britain buckwheat is grown chiefly as food for pheasants and other game, but the grain is said to be very good for horses, and goes as far in that way as an equal weight of horse beans. Like rye, buckwheat will grow and flourish on any poor dry land. It can be sown late in the spring, and mature in a very short time, but, as a rule, it ripens very irregularly. It is employed also as a green crop for soiling, or for green manuring, and is suitable for an intermediary or catch crop. It is rather delicate, however, and liable to injury from frosts, and consequently more adapted for the North Island than more southern districts. One bushel is sufficient to seed an acre, and all that is required is one ploughing and a fine tilth upon the surface, it being a shallow-rooting plant. On account of the succulent nature of the straw it must not be too hastily harvested, or it will quickly heat. In Europe it is generally cut with the scythe, and put into small stacks.

BUSH FARMING.—When seeking information on the subject of bush farming it should be remembered that the methods which experience has proved to be the best

muscular; if they are flat on the sides, and narrow in front as they s
shoulders, and deficient in muscle, they are radically defective.

THE BACK.—The comparative advantage of a long or short back dep
on the use for which the horse is intended. For general purposes Your
horse with a short body is to be preferred, as he is more likely to b
strong. Length of back is desirable when there is more than usual s
particularly when the loins are wide, and the muscles of the loins large
Strength and speed are then likely to be united. Some horses have a
behind the withers, and are called saddle-backed; others have the l
curving upwards, and are called carp-backed or roach-backed.



NAMES OF THE EXTERNAL PARTS OF THE HORSE.

1. Lips
2. Muzzle
3. Nose
4. Forehead
5. Hollow over eye
6. Forelock
7. Ears
8. Branches of lower jaw
9. Cheek
10. Nostrils
11. Poll
12. Parotid gland
13. Larynx or voice-box
14. Left jugular vein
15. Side of neck
16. Mane
17. Breast
18. Shoulder
18'. Shoulder point
19. Withers
20. Back
21. Loins
22. Side of chest
23. Croup
24. Abdomen or belly
25. Flank
26. Hip bone
27. Tail
28. Thigh
29. Buttock
30. Stifle joint
31. Sheath
31'. Scrotum or purse
32. Lower thigh (gaskin)
33. Hock
34. Hind cannon bone and back tendons
35. Hind fetlock joint
36. Pastern
37. Coronet
38. Hoof
39. Hind chestnut
40. Arm
40'. Elbow
41. Forearm
42. Knee
43. Fore cha
44. Fore cr and ha
45. Fore fe
46. Fore pa
47. Fore co
48. Fore ha
49. Fetlock hind
50. Dock, o anus

BACK SINEWS OF FORE-LEGS.—These should be large, firm, and dis
from the knee to the fetlock. If there be any thickness of cellular mat

hem, it indicates previous injury, as a rupture of the l
ay affect the motion of the tendon, and predispose th
ess and inflammation, such a horse should be rejected

CANNON BONE.—The cannon, or shank bone, sho
ideways, and thin in front. Any addition besides
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COFFIN JOINT.—The coffin joint connects the hoof
he coffin joint are always serious in their consequence

ELBOW.—Good judges prefer a deep elbow, as it is
ood action.

EYE-PIT.—By the depth of the eye-pit we are enab
f the horse. At the posterior part of the eye a co
tance is deposited, which enables it to revolve in it
as when a vicious horse rolls his eyes around). In
ith general loss of condition, much of this fatty
ecomes sunken, and the pit above the eye deeper
ealers puncture the skin and blow into the orifice, a
alled "puffing the glims," and can be detected by p

THE FOREHEAD.—Few things more clearly indicat
orehead. In the blood horse the forehead is broad
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ead narrow in comparison with that of the blood-ho

FETLOCK.—It is usual to apply the term fetlock t
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ootlock, is only the posterior part of the joint, whenc

FLANK.—The space between the ribs and the hau
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ndicating the state of respiration. During fever ar
ises and falls more rapidly than usual.

THE HOCK.—The hock is the most important an
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THE NECK.—A moderate and elegant curve of th
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THE PASTERNS.—The pasterns should be neith
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THE SHOULDER.—A muscular and sloping shou
nd speed are required, but an upright shoulder is
work.

hem, it indicates previous injury, as a rupture of the ligaments, and as this thickening ay affect the motion of the tendon, and predispose that part to a recurrence of lame- ess and inflammation, such a horse should be rejected as unsound.

CANNON BONE.—The cannon, or shank bone, should appear wide when viewed ideways, and thin in front. Any addition besides bone and tendon, causing a oundness in the leg, must arise from disease or useless cellular matter.

COFFIN JOINT.—The coffin joint connects the hoof with the leg. Severe sprains of he coffin joint are always serious in their consequences, and likely to return.

ELBOW.—Good judges prefer a deep elbow, as it is always seen in connection with ood action.

EYE-PIT.—By the depth of the eye-pit we are enabled to form some idea of the age f the horse. At the posterior part of the eye a considerable quantity of fatty sub- tance is deposited, which enables it to revolve in its orbit with facility and freedom as when a vicious horse rolls his eyes around). In old age and in disease attended ith general loss of condition, much of this fatty substance disappears, the eye ecomes sunken, and the pit above the eye deepens. To prevent this, dishonest ealers puncture the skin and blow into the orifice, and thus fill the eye-pit. This is alled "puffing the glims," and can be detected by pressure.

THE FOREHEAD.—Few things more clearly indicate the blood of the horse than the orehead. In the blood horse the forehead is broad and angular, gradually tapering rom this point to the muzzle; whilst in the cart-horse the face is large, and the fore- ead narrow in comparison with that of the blood-horse.

FETLOCK.—It is usual to apply the term fetlock to the joint itself, and the space etween the fetlock and the foot the pastern; but properly speaking the fetlock, or *ootlock*, is only the posterior part of the joint, whence grows a lock of hair.

FLANK.—The space between the ribs and the haunches is called the flank. When oo extensive it is an indication of weakness. The flank is usually referred to as ndicating the state of respiration. During fever and chronic diseases of the lungs it ises and falls more rapidly than usual.

THE HOCK.—The hock is the most important and complicated joint of the whole nimal. Like the knee-joint it should be hard and extended. An enlarged hock onstitutes unsoundness.

THE KNEE.—The knee should be broad, as offering more room for the attachment f muscle, breadth in this part being an indication of strength.

THE LOINS.—The loins can scarcely be too broad and muscular; the strength of he back and hindquarters hinges upon this point. At the junction of the back and oins a slight depression is sometimes seen: this is always an indication of weakness.

THE MUZZLE.—The muzzle includes the lips, mouth, and nostrils. The darker he colour of the muzzle the better the horse. The lips should be thin and firm; in ld and sluggish horses they are usually loose and pendulous.

THE NECK.—A moderate and elegant curve of the neck adds greatly to the beauty f the horse. The neck is sometimes recurved and hollow. A horse with such a neck s called ewe-necked, and is only tolerated in fast race-horses.

THE PASTERNS.—The pasterns should be neither too long nor too short. If too hort there is a want of spring, and such horses are uncomfortable to ride and liable o come down; on the contrary, if too long they are likely to be too slanting, and hough springy in gait, and making easy hacks, it is always an indication of weakness.

THE SHOULDER.—A muscular and sloping shoulder is indispensable where action nd speed are required, but an upright shoulder is preferred for strength and collar- ork.

liable to suffer in this way as some other classes of stock; yet Charles Colling must have felt its influence when, after trying his cow 'Phœnix' with good bulls without success, it is recorded that 'as a last resort' he fell back on a bull which was one-fourth Galloway and three-fourths Shorthorn, and attained his end."

Fashionable Colours: At the Royal English Show of Shorthorns, at Reading, the reports show that there were eight prizes and the same number of seconds and thirds.

SHORTHORN BULL MAJOR 59,419.

Winner of First and Champion Prize at R.A.S.E. Show, 1892. The property of Mr. H. Williams.

Of the first prizes five were won by roans, two red and white, and one white; of the seconds, seven were roans and one white; of the thirds, five were roan and three were red; total—roan, seventeen; red, three; red and white, two; white, two. It will be noticed that the reds are all thirds, not a single red having secured a first or second

prize. Of course this does not prove that a red Shorthorn may not be a good one; but it does go to show either that the reds are in a decided minority in the English showyard, or else that proportionately they are greatly inferior to the roans. Any appearance of black is considered a sure sign of impurity of blood, but black noses do

SHORTHORN HEIFER QUEEN OF THE CRESSIDAS 3RD.

occur even in fashionable herds; they are, however, not bred from, but usually drafted off to the butcher. Shape and handling—that is, the feel of the flesh in the hand as it is gripped—and the propensity to fatten early, and to produce a large supply of both milk and meat, have been held to be of more importance than uniformity of colour.

filled by the bees, are removed and replaced by others. The boxes when full hold just 1 lb., and can be sent to market as taken from the hive.

ARTIFICIAL COMB-FOUNDATION. — Next to the hive, nothing is so important in the apiary as comb-foundation. By its aid straight combs are insured, and built wherever required; it also saves the bees the greater part of their labour in secreting wax and building comb, thereby enabling them to gather more honey. It is made by passing thin sheets of wax through a machine that imprints the bottom of the cells on each side. More brood can be raised and more honey stored in comb built on this foundation than in natural comb, as the cells are more perfect. It is invaluable to the apiarist, and there is nothing he can use with greater profit than comb-foundation. Beginners sometimes make the mistake of using narrow strips of foundation in the frames instead of full sheets. A greater blunder could not be made, as it gives the bees an opportunity of building drone-comb, and thus the breeding of drones will follow; the very thing to avoid. Use full sheets both in the brood and surplus parts of the hive.

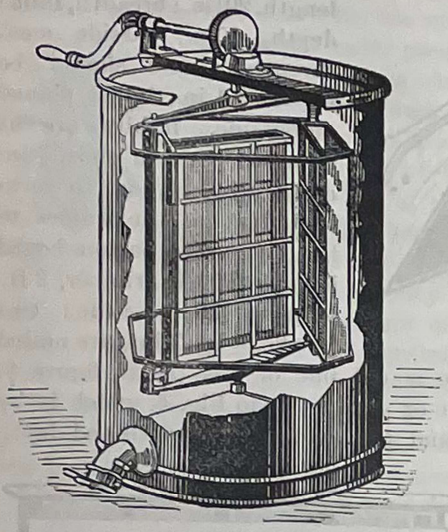


FIG. 9.—HONEY EXTRACTOR.

HONEY EXTRACTOR. — This is an implement that no bee-keeper with a half-dozen hives can afford to be without. Combs built on foundation in frames can be emptied of their contents time after time, without injury, and be made to last for years. Honey taken by the extractor is as pure as when brought in from the flowers, and retains the respective flavour of each kind gathered from. The extractor (figure 9) works on the centrifugal principle; a wire basket inside a cylinder, into which the combs are put after being uncapped, is made to revolve rapidly; this motion throws the honey out of the cells into the cylinder, from which it is drawn off. There has been a vast improvement in extractors, and the above illustration shows one of the latest.

FIG. 10.—UNCAPPING KNIFE.

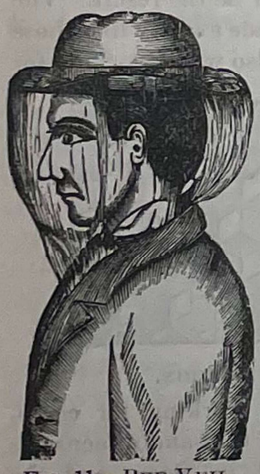


FIG. 11.—BEE-VEIL.

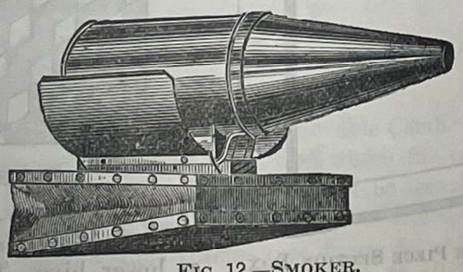


FIG. 12.—SMOKER.

UNCAPPING KNIFE.—This is used for shaving the caps off the cells containing honey previous to the frames of comb being put into the extractor.

BEE-VEIL.—All beginners should use a bee-veil, as it gives a sense of security

against stings. It may be made of grenadine or any kind of gauze, and should slip over the hat, the lower part tucking in under the collar of the coat, as in figure 11.

THE SMOKER.—No bee-keeper should be without a smoker. Smoke is the best bee-quieter known. It is not necessary to stupify them; a few puffs will cause them to rush to their honey, when they may be handled with little fear of getting stung. A roll of cotton rags, in the absence of a smoker, will answer the purpose, but is not so handy.

THE APIARY.

There are very few places where bees may not be kept with profit; but in establishing a large apiary some previous knowledge of the district as to its honey-bearing plants is necessary. The white clover districts of New Zealand undoubtedly are among the best in the world for the production of the very finest honey.

The hives should stand in a sheltered spot, near a shallow stream of water if possible, as bees require a deal of water during the breeding season. It is better that the spot be near the house, and away from stables or manure heaps, as bees dislike offensive smells. In preparing the stands for the hives, the bottom boards should be at least four inches off the ground, so that the air may circulate underneath and keep them dry. In arranging the hives the plan given in figure 13 will be found the best. The entrances should be placed east or north-east if possible, and not less than six feet apart.

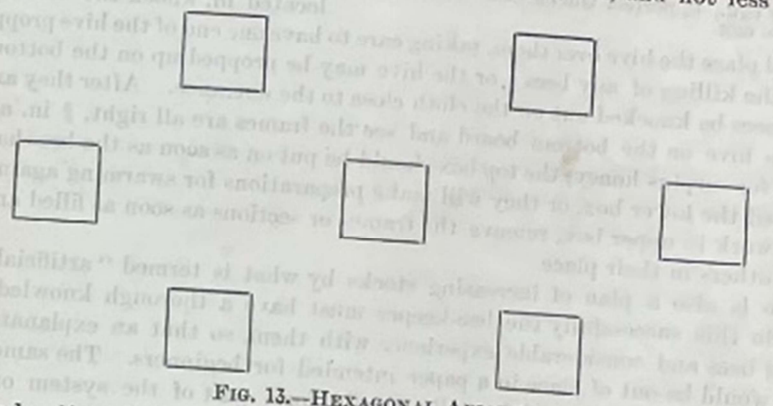


FIG. 13.—HEXAGONAL APIARY.

For shade, if such is required, fruit-trees planted amongst the hives are both economical and the best shade that could be had; for the trees, being deciduous, would not prevent the sun warming up the hives, and drying the ground in winter, but they must not be so close to the hives as to interfere with the working of them in any way. The workshop and honey-house in a large apiary should be as near the apiary as convenient, and large enough to stack the spare hives and combs away in winter.

INCREASE.

NATURAL SWARMING.—From the middle of October to the middle or latter part of February constitutes the ordinary swarming season in New Zealand. The better condition the colonies are in the earlier will be the swarms. Swarming is the act of forming new colonies. As the warm weather of spring sets in, and honey is becoming plentiful, breeding goes on rapidly, and, as the hive is getting filled up, preparations are made to form a new colony by rearing young Queens. Although

THE FAMILY DOCTOR.

[By A. Osborne Knight, M.R.C.S. (Eng.), L.S.A.]

ACCIDENTS.—Broken limbs should be carefully bound up until assistance can be obtained. Take a walking-stick, umbrella, shingle, coat, or any contrivance of that sort, and bind it firmly both above and below the injury, but not so as to stop the circulation. Lay the limb on a pillow, or some soft substance, and apply cold water rags to the broken spot. In cases of dislocation the part must be kept cool with fresh water until help is obtained, or if satisfied that no fracture is present attempts may be made by gentle yet firm pulling to replace the dislocated part. When reduced it should be kept at rest and cold water cloths applied. The general points of distinction between fracture and dislocation are, that in fracture there would be too free movement, inability to lift the limb, pain, and generally a grating sound as of the broken ends rubbing together. In dislocation the joint would be almost immovable, accompanied with pain and swelling, and no grating; also deformity when compared with the other side. Always endeavour to obtain skilled assistance, otherwise life-long injury may be the result.

Foreign Bodies are frequently swallowed by children and others, such as pins, pieces of money, etc. In the case of *recently* swallowed bodies of a smooth, round nature, as buttons, marbles, coins, an emetic may be given; but when it has been down some time it is better to leave it pass per bowel, and for this purpose food of a binding nature should be administered, such as hard-boiled eggs, suet pudding, and plenty of bread. This latter treatment is applicable to the case of pins and pointed bodies. Do not give any purgatives. The object is to allow the substance to become imbedded in the food, and thus prevent injury to the coats of the bowel.

Hemorrhage.—Bleeding must be at once stopped by pressing on the spot, if wound is small. If limb is partly severed, or a large vessel wounded, a handkerchief or bandage should be firmly tied immediately above the wound. A wound of artery is known by the blood spurting out of a bright red colour; blood from a vein comes slower, and is dark and thick. Apply cold water rags to the wound, to protect from dirt and allay inflammation.

Scalp Wounds.—*Treatment:* Require great care; clean the wound and cut the hair off; if much bleeding, place a wet pad of linen on the wound and bandage firmly. In all cases use cold water dressing and keep quiet; avoid all excitement, exposure to heat, and stimulants.

ANKLES—WEAK.—*Treatment:* Bathe in sea-water; wear lace boots, to form a support; do not allow jumping or running; have a piece of steel let into the side of boot and fixed firmly in the sole; if this is not possible wear a firm bandage; rub the ankle well with hand at time of bathing.

APOPLEXY.—Avoid the exciting causes, viz., over-exertion, excitement, fits of passion, drink, exposure to heat of sun, and excessive indulgence at table. Stout

persons, with short thick necks, should fear apoplexy. *Symptoms:* Person suddenly becomes insensible, breathing laboured, and accompanied with a snoring noise; cheeks may be puffed out at each expiration; the pupils of eyes generally unequal; one side of the body may be paralysed; the patient cannot be roused. *Treatment:* Place patient on bed or sofa, apply cold water cloth to head; loosen clothing, collar, etc., round neck; apply hot water bottles or flannels to feet and legs; *do not* give stimulants, emetics, or anything by mouth.

ASTHMA.—*Treatment:* Inhale smoke from brown paper—Stramonium cigarettes; blotting paper, soaked in strong solution of nitre, dried, and the fumes inhaled. It is sometimes due to overloaded stomach; if so, give an emetic or purge. A small cup of strong coffee often useful. Use blue gum leaves as directed in "CATARRH," Himrod's Asthma Powder, hot poultices to chest, or rub with camphorated oil.

BITE OF DOG, ETC.—*Treatment:* Immediately suck the wound and apply caustic; if dog is certainly mad, part should be cut out and washed with vinegar and water, or burnt with a hot iron. Fortunately, hydrophobia is unknown here.

BITE OF INSECTS, ETC.—Remove sting, and then bathe with liquid ammonia or strong brine. If by a reptile, tie string round part above the bite, suck the wound, cut out freely, or burn it with caustic or red-hot iron. Ammonia to part; give stimulants.

BLEEDING, OR HEMORRHAGE.—Bleeding from the stomach or lungs is difficult to determine without experience. Generally blood from the lungs comes after a fit of coughing, and is then of a bright colour, whereas that from the stomach would be nearly black, and is vomited; but blood from the lungs may be swallowed. Obtain advice at once. *Treatment:* Absolute rest in prone position; give cool drinks, and apply cold to the chest; put in cool room.

BRAIN FEVER.—*Symptoms:* Severe pain in head, rigors, vomiting, and more or less fever. In children, convulsions may occur. Head is hot, face flushed, and eyes bloodshot, bowels confined; delirium occurs during this stage. Next the pain in head diminishes, and there is less sensitiveness to light and sound; general restlessness and twitchings, pulse becomes slow and irregular, breathing laboured, the temperature generally falls; patient passes motions in bed; he remains in a state of coma or insensibility, until, perhaps, with a convulsion, the scene closes. The brain may be attacked in this manner during rheumatic fever. *Treatment*: Shave head and apply ice in a bladder; purge with calomel, croton oil, or jalap; perfect quiet maintained, and all excitement avoided. Sponging with tepid water is grateful to the patient. Diet at first must be unstimulating, but if power is failing give strong beef-tea, ammonia, or even a little wine. A medical man should, if possible, be obtained.

BRONCHITIS.—*Symptoms:* Chilliness, flushes of heat, quick pulse, thirst, breathing becomes hurried, with sensation of tightness and soreness of chest. Cough, at first dry, is soon accompanied with expectoration; rattling of mucus on chest can be heard at a distance. *Treatment:* At first same as for catarrh; apply hot poultices to chest; keep air moist with steam, and let patient inhale it—this will "cut" the phlegm. Give nitre in good doses, if much fever, or tincture of aconite. For cough, with difficult expectoration, give ipecac. wine and vinegar of squills; if very troublesome, give half a teaspoonful of paregoric, for children from 10 drops according to age.

BURNS.—*Treatment:* Remove clothing carefully, cutting away with scissors. To mere scorches, causing redness, apply oil, soap, or flour, to keep the air off. When skin is broken and destroyed, use sweet oil, or, better, equal parts of linseed oil and lime-water, spread on wadding. Soft rags dipped in a solution of carbonate of soda will relieve pain sooner than most applications. Opium, to relieve pain and procure

They learn while young very quickly, and it is important that all should be able to help themselves or others in cases of accident. If such were the case, many valuable lives might be spared. *Air:* Fresh air is another important factor in the health of children. Exercise in the open should be freely indulged in; bad indeed must be the weather that should prevent children from some out-door exercise. *Bathing:* And these remarks may apply to the adult as well. Do not bathe soon after a full meal; and, on the other hand, it is not well to bathe on an empty stomach. An hour or so after breakfast is the best time. The morning bath should be cold, the evening one tepid. Do not remain in the water too long. When you begin to feel chilly and shiver, it is time to give over. The sign by which you may know that a bath is doing you good is, after coming out the blood rushes to the surface, and produces a pleasurable glow; but if, on the other hand, this does not occur, and you feel cold, and fingers become dead, it will be a guide to show that you have remained too long in. Do not dawdle about when undressed, but be on the move—plunge head first into the water, and swim about; then, you will assist the circulation and be much warmer.

COLIC.—*Treatment:* Pressure relieves pain. Being usually due to presence of undigested food, give an aperient, such as rhubarb with sal volatile; opium to relieve pain, and hot fomentations to stomach.

COLLAPSE, OR SHOCK.—Caused by violent or painful accidents, or mental shock. *Symptoms:* Coldness of skin, insensibility more or less complete, respiration, sighing, at times vomiting. Patient generally recovers, but inflammation or gradual death may occur. *Treatment:* Put to bed, warmth to extremities; hot strong coffee, beef-tea and stimulants in moderation, if patient keeps very low, or is a long time recovering. For inflammation, see treatment of "BRAIN FEVER."

CONCUSSION OF BRAIN.—Pulse small and weak, pupil contracted—one may be larger than the other if there is pressure on the brain; insensible, but can be roused. *Treatment:* Rest in bed and cold to head; vomiting is favourable; give milk and beef-tea—*no* stimulants. Patient may gradually recover; if so, care must be taken for several weeks after, or compression take place, known by insensibility, heavy breathing, pulse slow, pupil dilated, paralysis. But very little can be done, and that only by a surgeon. Keep cold to the head.

CONSTIPATION.—Aperient medicines, long continued, do much harm. Is best treated by regulating diet. This should consist of vegetables; fruit, as figs, tamarinds, prunes, etc.; brown bread and active exercise. Fruit is best taken in the morning. A good plan is to take sipping a glass of cold water first thing in the morning, or half-a-tumbler of Pullna, or Friedrichshall water combined with an equal quantity of hot water. Friction over the bowels, and encouraging them to act every morning at a regular hour, will greatly assist in restoring them to their natural state.

COUGHS.—*Treatment*: Alum in spasmodic coughs; in chronic bronchitis give carbonate of ammonia, Friar's balsam, or infusion of senega. In the violent coughs of the winter [illegible] should be tried.

mustard leaf to the nape of neck; putting the hands or feet in mustard and water will relieve conjestive headache.

HOUSEMAID'S KNEE is a tense swelling directly over the knee-cap, due to irritation from kneeling. *Treatment:* Paint with iodine and avoid kneeling. When of long standing will require to be tapped. If from any cause it becomes inflamed, rest and application of cold water rags is the treatment.

HYSTERIA.—*Treatment:* Cold water dashed on face and chest is a good remedy, and must not be spared. Firmness must be used, and no whims given in to, but kindness with all. Give a dose of sal volatile, valerian, or assafœtida. The monthly times are often at fault, and will require attention.

INDIGESTION.—(See "DYSPEPSIA.")

INFLAMMATION OF BOWELS is a very painful and serious complaint. *Symptoms:* Chills and rigors, accompanied with intense pain over the abdomen, which becomes hot, swollen, and tense. Patient lies on his back with knees drawn up, and is afraid of the gentlest touch. Breathing is short and hurried, nausea and vomiting are present, anxious expression, pulse small and quick, bowels confined. *Treatment:* In very early stage a full dose of Epsom salts will be useful, but afterwards the laudanum to ease pain, in 10 to 20 drop doses; or chlorodyne, 10 to 20 drops, repeating every two or three hours until easier. Apply hot poultices or turpentine stupes to abdomen. Avoid aperients later, as the bowels must rest. Diet must be a light fluid.

INFLAMMATION OF BREAST.—*Treatment:* Rest in bed, or, if obliged to be about, support the breast with a handkerchief. A mild aperient is often required. Apply hot fomentations and poultices. It is better to have it opened as soon as matter forms; when abscess is open, dress it with water rags or vaseline. Tonics and good food must be given.

INFLAMMATION OF JOINTS.—*Symptoms:* After an injury, swelling, pain, heat, and some redness. *Treatment:* Absolute rest, with application of ice or cold water constantly. If swelling remain after inflammation has subsided, paint with iodine. When acute symptoms have subsided, gentle movement must be made to prevent a stiff joint.

INFLAMMATION OF LUNGS (PNEUMONIA).—*Symptoms:* Pain in side, difficulty of breathing, fever; the cough, which at first is dry, soon is accompanied by phlegm, mixed with blood, giving it a "rusty" appearance. There is great depression and prostration, the skin is hot and dry, temperature runs high, pulse is frequent, and soon becomes feeble; lasts about ten days, when perspiration breaks out, and patient begins to mend. *Treatment:* A hot bath at outset will often moderate, if not check an attack, by producing a copious sweat. Give an aperient; hot poultices, fomentations, or turpentine stupes to chest, to relieve pain; morphia in small doses, or Dover's [illegible] sleep. If much fever, give one dose of [illegible] as carbonate of

he gradually becomes weaker. A violent rigor or shivering fit now attacks him, with great heat of skin, intense headache, so that patient takes to his bed. The fever increases, and delirium often occurs. This is a serious complaint, and should symptoms similar to the above come on, medical assistance must be obtained at once. Lasting as it does for three weeks, great care is necessary, and the directions of the doctor should be faithfully carried out. *Treatment*: In the meanwhile *no* solid food must be given, only milk, beef tea, and cool acid drinks. The room should be kept cool, with plenty of fresh air, but avoid draughts. All that passes from the patient is to be thoroughly disinfected with chloride of lime, carbolic acid, or Condy's fluid, and then conveyed to a distance and buried. If fever runs high, give from five to ten grains quinine, or aconite tincture in three to eight-drop doses; less for a young child. Do not attempt to open bowels without doctor's advice; diarrhœa may be checked. Avoid stimulants at first, but later on they are most useful when patient is exhausted. Diarrhœa is frequently a prominent symptom; if present, no broth of any kind must be given.

FITS.—*Treatment*: Protect patient from harming himself; place a cork between teeth, loosen clothes about neck, and in women the stays; apply cold to the head, and place him in a cool, well ventilated room. A medical man should be consulted, so that the cause may be sought, and, if possible, cured.

GOUT.—*Symptoms*: Comes on usually early in the morning, with inflammation, generally of the big toe. Patient wakes with severe pain in toe, and shivering; pain increases with burning, throbbing, and exquisite tenderness. These symptoms abate in a few hours, and then he sleeps awhile, a gentle perspiration breaking out on waking. Foot is easy during day, but pain gets worse towards night. *Treatment*: Give a brisk purge of white magnesia, twenty grains, and Epsom salts, half-ounce. Wrap joint in flannels soaked in hot soda water. Wine of colchicum, in ten-drop doses, is the remedy most useful. Diet must be regulated; avoid wines, rich dishes, and animal food; vegetables must be chief diet.

HANGING.—Cut down immediately, and resort to artificial respiration as under "DROWNING."

HEADACHE.—The treatment mentioned under "CONSTIPATION" must be borne in mind here; the meals must be taken regularly; do not overload the stomach. In bilious headache, take dose of soda and rhubarb; the mineral waters, as Friedrichshall, will be very useful. In sick headache, without actual sickness, take half-a-drachm of Guarana powder, and repeat it in two hours. Sal volatile internally and externally; camphor dissolved in eau-de-Cologne to the forehead in cases of womb disorder. A

PUKA-TEA WEED.—This weed is boiled (roots and all), and applied hot as a poultice to cuts, bruises, or wounds. A decoction is taken for looseness of the bowels, or to allay stomach-ache. It is also used as a lotion for pimples or sores, and to wash the heads of infants troubled with scurf.

RANGI-ORA *(brachyglottis repanda)*.—The bark of this shrub and the ends of the branches, on the west side, are cut, and an aromatic gum exudes, which is chewed to cure foul breath, or is dissolved in oil. It must be preserved in water to keep it soft.

RATA *(metrosideros robusta)*.—Bark is steeped in water and used as lotion for ringworm, also as lotion for venereal, when bark of the puka-tea is taken inwardly. The flowers and bark are used generally in the same way as the pohutu-kawa.

RIMU-ROA.—A long sea-weed, which grows on the rocks on the sea-coast. Its tender end is roasted and eaten as a cure for the itch and worms.

STEAM BATH.—This is made as long as a human being, and heated with hot stones, over which are placed mats and the leaves and twigs of the kawakawa, kai-whiria, koro-miko, kai-kai-aruhe, ka-retu (grass), and nga-io. Each of these plants is said to possess some medicinal property. Some new mats are placed on these leaves, and a common Maori mat put on top, on which the patient sits. He is covered over with mats, and a copious perspiration is the result. The patient is then removed and kept warm.

TARA-MEA.—This plant exudes a sort of gum on its long, stiff, and pointed leaves, which is collected by the Maoris at dawn, while the dew is on the plant, and is used as one of the ingredients in the scent for clothing kept in the carved houses of head chiefs. To make this compound of scents, the aromatic fern called "moki-moki," with the gum obtained from the ta-rata, and the ko-puru moss (which is obtained from humid rocks in the most dense part of the forests), with the fragrant flowers and roots of the pa-to-tara, and the fragrant grass called ka-retu, and the plant hioi, are mixed into a compound with the gum of the tara-mea and oil of the miro, and subjected to heat for days, until the roots and herbs are softened, when it is strained through a layer of the flowers of the ka-kaho bloom.

TARATA *(pittosporum eugenoides)*.—A resinous balsamic gum is obtained from this tree. A groove is cut in the bark, lengthways up the tree. The bark is about three-quarters of an inch thick. The gum is used in the same way as the rangi-ora.

TATARA-MOA *(rubus fustialis)*.—The bark of this climber is boiled, and taken as a purgative in cases of severe stomach-ache. If it does not act quickly, a decoction made from the bark of the tawhero tree is taken.

TA-WHERO, OR TO-WAI (*weiumannia racemosa*).—The bark is taken off on the west side of the tree, the outer rind is scraped off, and the inner part made into a decoction with hot water. This is taken internally as a purgative in cases of stomach-ache and pains in the chest.

TI-TOKI (*alctryon excelsum*).—The berry of this tree yields an oil of slightly green colour, which is put into the ears to relieve pain. Also applied to weak eyes, sore breasts, and the chafed skin of infants, and as a lotion for wounds and sores that are healing, bruises, sprains, and pains in the joints. Taken internally, it is a laxative. The red pulp is very astringent, and is taken by consumptive patients to stay blood-spitting. The natives gather the berries, and, after beating them into pulp, sew them up in a close mat, and heat in the oven. The ends of the mat are then twisted with sticks, bringing pressure upon the beaten pulp, which causes the oil to exude.

TO-TARA.—The outer dry bark of this tree is used as splints for broken limbs, in connection with the stiff root part of the flax leaf.

TU-PAKIHI, OR TUTU (*coriaria ruscifolia*).—Seeds virulently poisonous; leaves and twigs dangerous to cattle. The leaf is soaked in water for a short time, and the liquid taken off used for dysentery. The juice obtained by bruising the pith of the tree, is mixed with an equal quantity of water, and drunk by lunatics. The juice of the berry is put into calabashes, with some seaweed or kelp, called karen-go, and the calabashes placed in pits in the soil, when it ferments. This is taken to counteract the effects of the costiveness caused by eating the totara, rimu, or karaka fruit and berry, and as a relish and laxative with a diet of fern root. The Maori is at all times very careful not to eat any of the seeds of the tu-pakihi, or even to chew the twigs or the pulp of the larger branches or trunk of this shrub, as he believes that the poisonous principle which causes great agony and convulsions is contained in all those parts of the plant. In cases of poisoning by this shrub, the patient becomes sleepy at first. He is immediately gagged with prepared flax, to prevent biting his tongue, and taken to a stream, and ducked for some time, until nearly drowned. If he swallow large quantities of water in this process, or can be persuaded to drink, so much the better. He is then taken to a fire, and held, feet up and head down, in the smoke (a rough way of providing an emetic), which induces vomiting, clearing the stomach. He is removed to a steam bath, and kept there till the convulsions entirely subside. He is then kept warm, and given light diet, consisting of gruel made from the root of the convolvulus, or the kumara.

WAO-RIKI.—This plant grows in shady places on the borders of forests ; its leaf is not unlike clover. The whole plant is taken and bruised, and the juice wrung out of it; this is used for pains in the joints and rheumatism. The plant must not be handled with the bare hands or the juice allowed to touch the skin, for wherever this juice touches the human body it makes a blister like that caused by Spanish flies.

WHA-RANGI (*melicope ternata*).—The gum of this tree is chewed by the Maoris for foul breath. Care must be taken not to mistake it for the WHARANGIPIRO, the gum of which is a deadly poison.

A considerable number of other indigenous plants, berries, and fungii used by the Maoris as food and medicine are given in Mr. White's Maori History, but those already enumerated are the most noteworthy.

SHRIMPS.—To boil shrimps, they should be thrown into boiling water, to which salt in the proportion of 1 ounce to every quart of water has been added; boil till they change colour—about six minutes; do not over-boil, or they will spoil.

BUTTERED.—Pick the boiled shrimps and put in stew-pan, with ¾ pint gravy stock or cream sauce, thickening with flour and butter; salt, pepper, and nutmeg to taste; simmer 3 minutes; serve on dish with toast.

SOUP.—Where there is a large family and small means, soup or broth affords a most economical and palatable food. A well-spent shilling may bring greater comfort than half-a-crown laid out without judgment; if, instead of purchasing a great quantity of greens or potatoes, or the usual allowance of beer or cheese, six-pence only were laid out in meat, by the mother of a family; this would buy 3 pounds of the cheaper parts of beef and mutton. If this meat be cut up into small pieces, and put into about 2 quarts water, and set to warm slowly by the fire until it boils, it will make a most excellent and nourishing soup. This may be thickened with oatmeal, rice, or hard-toasted bread, or poured over and eaten with potatoes. The meat, with a little of the soup, may be warmed up with other vegetables for dinner the next day; and sometimes six-pennyworth of meat, if well prepared, may be made to serve for three dinners. Salt or pepper may be used according to taste. This soup is a nice, comfortable dish, especially in cold weather.

The restaurant-keeper understands how every bit of meat and other material, good in itself, but otherwise difficult to prepare in a presentable shape, can be turned to good account in the stock-pot, and the thrifty housewife, who is a good manager, will value this method of preventing waste. Excellence in the art of domestic economy lies in wasting nothing, and at the same time never presenting anything at the family table that is not palatable and wholesome food; and soup and broth, rightly managed, are wonderful contributors to this result. The palling round of family dinner might be varied to a wonderful extent were the materials in vegetables and meat which are daily thrown out of doors turned to proper account in the stock-pot.

Stock.—The cheap cuts of meat answer for this purpose as well as the finest joints, and a good stock can be made to serve as the basis of almost any kind of soup. The following makes an excellent stock; 4 pounds shin-bone, and 1 pound lean neck of beef, 4 carrots, 1 turnip, 1 stick celery, 2 parsnips, 2 leeks, 1 onion, 6 cloves, 6 peppers, 1 bunch sweet herbs, 1 gallon water. Cut the meat into slices, crack the bone, and put into an earthen pipkin that will stand the fire, as this makes far better soup than a metal saucepan; add the water, and let it stew slowly until the scum rises, and skim it clear; stick the cloves into the onion, and then add the vegetables, and let the whole stew slowly till the meat is in rags, which will be in about eight hours. It must simmer very slowly, for if it boils, the meat will not yield the gravy so well, and the stock will be thick in the place of being clear. After it is cold, it should be strained through a colander, and keep it in a covered pan or jar for use.

Colouring for Soup.—As soups often require colouring, it is well to prepare browning for that purpose. 2 baked onions (well browned in the oven and then chopped fine) make an excellent colouring and flavouring. The shells of green peas (dried in the oven till they are brown, but not black), will also answer to brown soup, and will keep all winter if hung in a perfectly dry place.

ASPARAGUS SOUP.—Cut the tops from about 30 heads asparagus, about half an inch long, and boil the rest; cut off all the tender portions and rub through a sieve, adding a little salt; warm 3 pints soup stock, add a small lump of butter and 1 teaspoonful flour, previously cooked by heating the butter and slowly stirring in the

LEGAL MEMORANDA.

(See also Appendix.)

By F. D. FENTON

(Formerly Assistant Law Officer to the Crown, District Judge, and Chief Judge of Native Lands Court).

ADOPTION OF CHILDREN.—"The Adoption of Children Act, 1895," authorises a District Judge, upon the application in writing in a form prescribed by Governor by—

(1.) Husband and wife jointly; or by

(2.) Married woman alone, with the written consent of her husband;

(3.) Unmarried woman, who is, in the opinion of the Judge, at least 10 years older than the child;

(4.) Unmarried man, in the opinion of the judge, at least 40 years older than child.

To make an order of adoption of a female child in favour of the applicant.

Similar power is given in the case of a male child with the variation of 4, that the unmarried male applicant must be not less than 18 years older than child, and if the applicant is an unmarried woman, she must be at least 40 years than the child.

The Judge must be satisfied that the child is under the age of 15 years, that the posed adopter is of good repute, etc., and that the parents or legal guardian and that the child, if over the age of 12, consents.

Consents are not necessary in case of a deserted child.

An adopted child has the legal status of a legitimate child, except as to rights to property, etc., which are specified in the Act.

The adopting parent has the legal status of a natural parent.

The Judge's order may be varied or reversed.

Authority is given for the adoption of deserted children in connection benevolent institutions, and provision is made with regard to religion, inheritance property, etc.

A Stipendiary Magistrate has the same power as a District Judge.

"GOVERNMENT ADVANCES TO SETTLERS ACT, 1894," authorises Government to advance money on mortgage of land (not urban or suburban) in not less than £25 or more than £2,500—not to exeeed three-fifths of the value land. The following summary of the Act is extracted from circulars issued by Department:—

The advantages to the borrower of the conditions of an advance are: 1. The to at any time partly or wholly pay off the loan. 2. The low rate of five per for interest. 3. The easy repayment of loan by annual instalments of £1 per 4. No commission or procuration fees. 5. Extremely small valuation fees and charges. 6. Secrecy.

Any postmaster or agent of the Public Trustee will, on demand, supply free of charge the form of application and a circular explaining the conditions of the loans and the advantages to borrowers, and will also explain how the form should be filled up, or instruct an applicant how to proceed.

The settlers requiring money should themselves apply direct to the Superintendent, Government Advances to Settlers Office, Wellington. The employment of any intermediate agent who may require commission or fees for procuring the loans is unnecessary.

The business of the Government Advances to Settlers Office is the advancing of money in New Zealand on *first mortgages* of the following classes of lands, *not being urban lands or suburban lands used for residential or manufacturing purposes*, free from all encumbrances, liens, and interests other than leasehold interests; that is to say:

1. Freehold land held in fee-simple under "The Land Transfer Act, 1885," or freehold land held in fee-simple the title to which is registered under "The Deeds Registration Act, 1868."

2. Crown land held on perpetual lease under "The Land Act, 1885."

3. Crown land held under Parts III. and IV. of "The Land Act, 1892," including land held under occupation with right of purchase tenure.

4. Crown land held on lease as a small grazing run under "The Land Act, 1885," or under "The Land Act, 1892."

5. Crown land held on agricultural lease under "The Mining Act, 1891."

6. Crown land held on lease (not being for mining purposes) under "The Westland and Nelson Coalfields Administration Act, 1877."

7. Native land held on lease under "The West Coast Settlement Reserves Act, 1892"; or

8. Land held on lease under "The Westland and Nelson Native Reserves Act, 1887."

9. Land held under "The Thermal Springs Districts Act, 1881."

10. Educational and other reserves which are subject to the provisions of "The Land Act, 1892," by virtue of Proclamation made under section 243 thereof, and are held on perpetual lease or lease in perpetuity.

11. Crown land held by license on the deferred payment system under Part III. of "The Land Act, 1885."

12. Land held under lease from a leasing authority, as defined by "The Public Bodies' Powers Act, 1887," and providing for the payment by the incoming tenant of valuation for improvements made upon the land, whether by the lessee named in such lease or any former lessee as tenant.

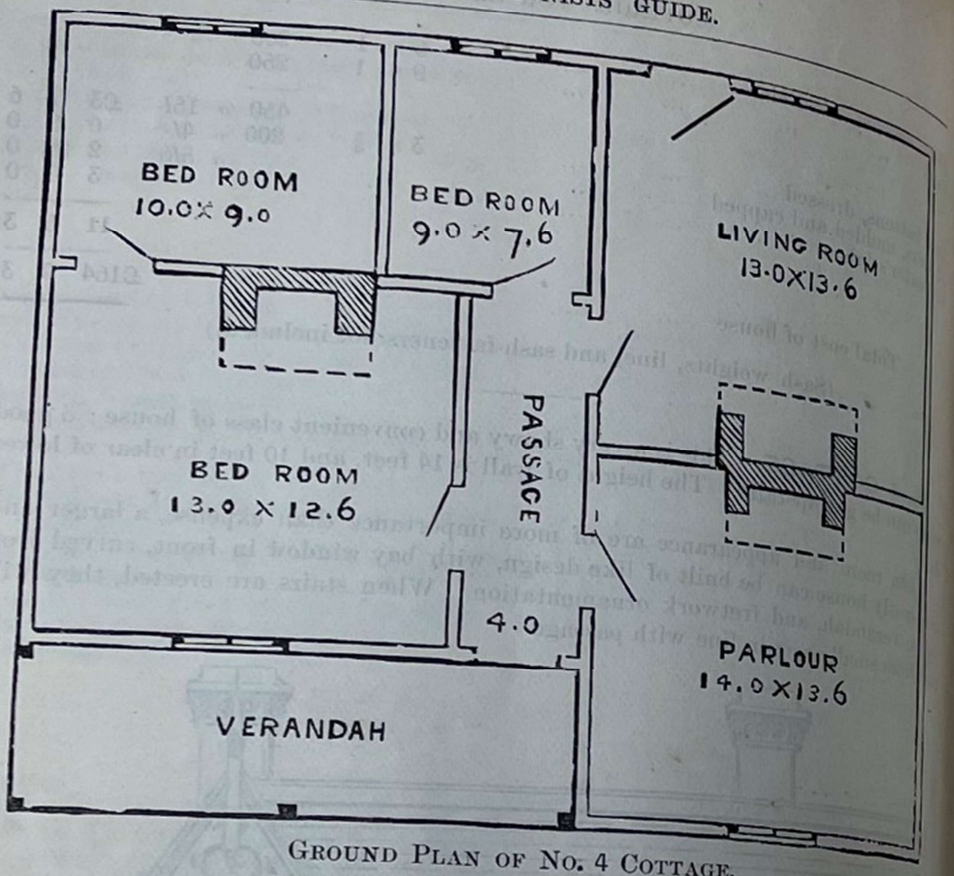
The class of land in each instance, and whether the land is or is not suburban land, shall be determined by the Board.

Prior to the passing of the Amendment Act of 1895, which has considerably enlarged the scope of the principal Act—the three classes of land, 10, 11, and 12, were not eligible as securities for loans under the Act, and the many persons who had no other security to offer were consequently excluded from the benefits of the Act.

Advances may now be made on suburban lands which are held or occupied for farming, dairying, or market gardening purposes.

It is necessary to the granting of an advance under the Act that—

(*a*) The security—that is, the property which the applicant offers to mortgage for the loan—shall consist of some one or more of the several classes of land mentioned in the foregoing paragraph 2, and shall, of course, be of the necessary value; and, if



GROUND PLAN OF No. 4 COTTAGE.

ESTIMATE FOR HOUSE 33 x 23, 14 FEET HEIGHT OF WALL, LOWER STOREY 10 FEET CLEAR.

(House blocks not included.)

Bottom plates and sleepers, First class ...			4 x 3 =	349ft.	
Weatherboards	,,	...	9 x ¾ =	1,700	
Saddles, ridge, and fascia	,,	...	9 x 1 =	400	
String course to carry upper floor	,,	...	6 x 1½ =	87	
Upper floor joists	,,	19/15, 14/18	9 x 1½ =	605	
Valley rafters	,,	... 2/21	9 x 1½ =	48	
Angle stops	,,	..	3 x 1½ =	19	
Door sills	,,	...	9 x 3 =	18	
				3,226 @ 13/-	£20 19 6
Sundries, Second class	...	...	4 x 3 =	270	
Studs	,,	.. ... 96/14	4 x 2 =	896	
,, Corner	,,	... ... 6/14	4 x 4 =	112	
,, Partition	,,	... ... 22/10	3 x 2 =	110	
Floor joists	,,	... 19/15, 14/18	6 x 2 =	537	
Top plates	,,	... ...	4 x 2 =	107	
Rafters	,,	.. 22/17, 24/16	4 x 2 =	506	
Roof ties	,,	... 12/12, 17/8	6 x 1 =	140	
Roof battens and braces, Second class		...	6 x 1 =	1,300	
				3,978 @ 8/-	15 18 5
				2,200 " 5/6	6 1 0
Rough lining		...	9 x ⅜	600 " 11/6	3 9 0
Lining (kitchen), medium, P.T.G.B.		...	9 x ¾		

Rusticated weatherboards for front, First class			600 @ 15/-	£4	10 0
Flooring, medium P.T. and G. ...	6 x 1		1,000 " 12/-	6	0 0
Ceilings, medium, D. I. S. ...45/14, 10/10, 10/8	12 x ½		810 " 9/6	3	17 0
				60	14 8
Ceiling battens, molded	2½ x ½		750 " 5/-	1	17 6
" margins, planed	4½ x ¾		300 " 4/6	0	13 6
Cornice molding			300 " 9/-	1	7 0
Skirting, 9 inch molded			265 " 14/6	1	18 6
1 Front door, 2″, 7′ x 3′, Cir. hd., R.P. ..				1	9 6
1 Fanlight over front door, 3′ x 1′ 6″ ...				0	4 3
1 Back Door, 1½″, 6′ 10″ x 2′ 10″, bd. butt and mold...				0	12 0
5 Inside Doors, 1½″, 6′ 10″ x 2′ 10″, D.M.			" 11/6	2	17 6
5 pairs Sashes, 4 lights	36 x 18		" 15/-	3	15 0
5 Sash Frames for ditto, 5 inch architraves			" 17/9	4	8 9
3 pairs Sashes, 4 lights	28 x 15		" 9/6	1	8 6
3 Sash Frames for ditto, 5 inch architraves			" 15/6	2	6 6
5 inch Architraves for doors			280 " 14/6	2	0 8
12 inch Barge Boards cut to pattern ...			66 " 1/-	3	6 0
3 turned Finials			" 5/-	0	15 0
1 Mantelpiece each for bedroom and parlour (circular with carved trusses)			2 " 23/6	2	7 0
1 Mantelpiece for kitchen, 3′ 6″ x 3′ 8″ ...				0	12 0
				31	19 2
2 brick Chimneys with cement hearths ; 3,600 bricks, 60 bushels sand, 24 bushels lime, 1½ bushels cement ...				19	0 0
Painting and paperhanging outside and in				34	0 0
7 locks and 7 pairs hinges				1	6 3
Nails—1¼cwt. 3 inch, ½cwt. 2½ inch, ½cwt. 1½ inch, 10lb. 4 inch, 25lb. 2 inch (wire) ; 40lb. 2¼ inch (flooring brads)				3	5 0
5 sheets No. 12 zinc				1	17 6
80 feet 5 inch Ogee spouting and spikes...				1	10 0
30 feet 2½ inch Downpipe				0	7 6
				8	6 3
Carpenters' labour				37	10 0
Plumber's labour				2	17 6
VERANDAH.					
Plates and joists, First class	4 x 3 =	108ft.			
Top plate "	9 x 2 =	38			
Rafters and purlins "	4 x 2 =	40			
			186 @ 13/-	1	4 2
Roof, P.T.G. "	9 x 1		160 " 15/-	1	4 0
" battens "	4 x ¾		200 " 4/6	0	9 0
Flooring " P.T. and G....	6 x 1		120 " 15/-	0	18 0
6 Verandah posts, molded and capped ...			" 5/6	1	13 0
26 feet 4 inch Ogee spouting and spikes...				0	8 8
10 feet 2 inch Downpipe				0	2 1
Carpenter's labour				5	18 11
Plumber's labour				2	10 0
				0	10 0
Total cost of ground floor				£203	6 6

SPECIFICATION OF WORKS TO BE EXECUTED IN THE ERECTION OF A COTTAGE.

By Mitchell and Watt,
Architects to the Auckland Board of Education.

CARPENTER AND JOINER.

Blocks.—The foundation blocks are to be hardwood (heart timber), to average 8in. x 6in., both ends cut square, spaced not more than 4ft. apart, and sunk 18in. in the ground.

Timber.—The timbers for intermediate studs, roof framing, and rough linings are to be good medium, and all the remaining timbers are to be heart, free from defects, dry and well seasoned.

Framing.—The ground plates and sleepers are to be 4in. x 3in., spiked to the blocks, corner studs 4in. x 4in., intermediate studs and upper plates of outer walls 4in. x 2in., partition studs and plates 3in. x 2in., floor joists 6in. x 2in., ceiling joists 4in. x 2in., joists and studs spaced 18in. apart, and properly framed and nailed together. Brace outer walls each with two 4in. x 1½in. braces, checking 1in. out of the studs and ½in. out of the braces, and similarly brace each partition with one brace.

Roof.—The rafters are to be 4in. x 2in., checked to 4in. x 1½in. pole plate, and spaced not more than 3ft. 6in. apart, the ridge and hips 9in. x 1½in., collars and hangers 6in. x 1in., and purlins 3in. x 2in. spaced not more than 3ft. 6in. apart, all securely framed and nailed together. Finish eaves with 9in. x 1in. facia and soffite, 2½in. x 2in. bed moulding, and 1¼in. returned bead under all spoutings.

Weatherboards.—Cover the outside walls from eaves to ground with 9in. x ¾in. shot-edged boards having 1½in. lap and fixed with 3in. wire nails. Cover angles with 4in. x 4in. solid rebated saddles having ¾in. scribing pieces at edges.

Flooring.—Lay the floors with 6in. x 1in. p.t.g., cramped and double-nailed with 2½in. brads, punched in, and the joints planed off flush. Put 2in. x 1in. mitred borders to hearths. Make floors vermin-proof by fixing 9in. x 1in. between the joists, and carrying flooring out to the weatherboards.

Lining.—Line the walls of kitchen, porch and pantry with 6in. x ¾in. p.t.g. boards V jointed, prepared for varnish; line outer walls with 9in. x ¾in. t. and g. rough, and partitions with 9in. x ½in. rough boards, all fixed closely together and double-nailed. Box out and line chimney breasts, and make true angles.

Skirting.—Finish all walls with 9in. x 1in. moulded skirting, scribed to floor and in angles.

Ceilings.—The porch and pantry ceilings are to be lined to match the walls, and to have 1¼in. returned beads in the angles. All other ceilings are to be formed with 12in. x ½in. planed boards, prepared for varnish, formed into equal panels with 4in. moulded battens over joints butting to 2½in. x 2in. cavetto moulding in the angles.

Windows.—The pantry sashes are to be 3ft. 11in. x 2ft. 4in., and the others 5ft. 11in. x 3ft. 4in., 2in. thick, 4 lights, glazed with 16oz. clear glass, double hung with 2in. pulleys and No. 7 Silver Lake cord in 1¼in. frames, properly cased and

Staircase				75	"	9/3	8 1
Carpenter's labour					"	10/.	1 5
							0 7
							10 0
							9 10
Cottage complete							25 7
							£225 0

No painting or papering upstairs. (Sash weights, line, and sash fasteners included.)

WEIGHTS OF CORRUGATED IRON PER SHEET.

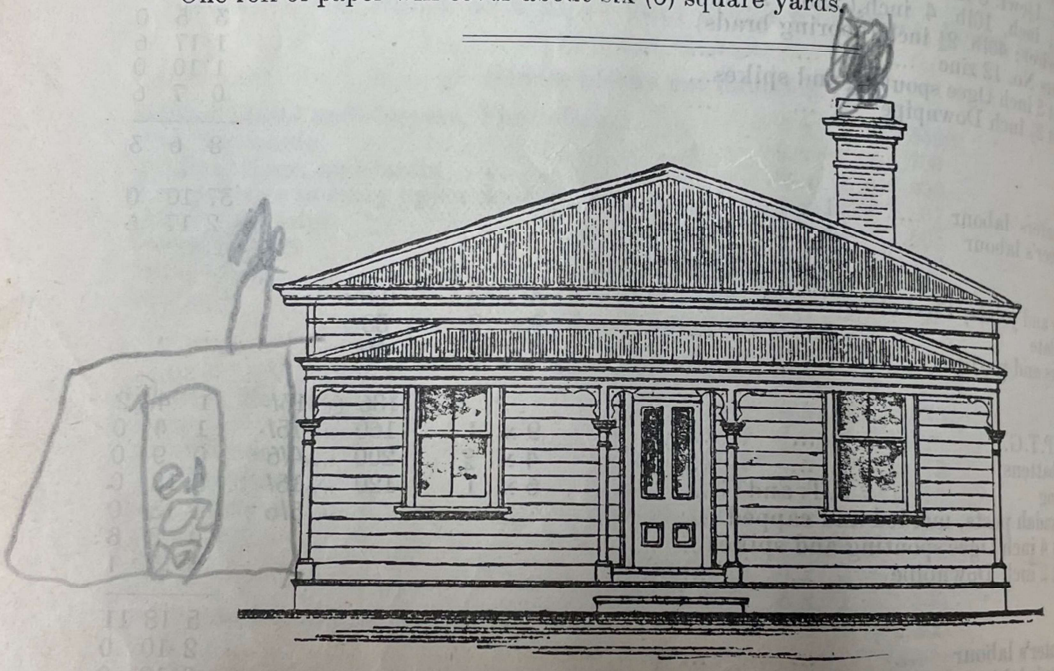
Gauge.	Size.	Weight approx.	Gauge.	Size.	Weight approx.
26	5 feet	10 lbs.	26	8 feet	16½ lbs.
26	6 ,,	12 ,,	26	9 ,,	18½ ,,
26	7 ,,	14¼ ,,	26	10 ,,	20½ ,,

WEIGHTS OF ZINC PER SHEET.

Size.	No.	Weight.	Size.	No.	Weight.
7′ x 3′	8	14 lbs.	7′ x 3′	11	17 lbs.
7′ x 3′	9	14½ ,,	7′ x 3′	12	20 ,,
7′ x 3′	10	15 ,,	7′ x 3′	14	24 ,,

PAPERHANGING.

One roll of paper will cover about six (6) square yards.



SETTLER'S COTTAGE, NO. 5.
Designed by Mitchell and Watt, Architects.

5ft. apart, and 3in. x 2in. purlins. Put 1¼in. cut brackets in angles over posts. The step is to have 2in. strings and centre bearer, the tread to be formed with three 3in. x 2in. battens spaced 1in. apart.

OUTBUILDING.—Erect the outbuilding in all respects as specified for main building. Finish roof head and ends with 6in. x 1¼in. covering boards, and 2½in. x 2in. moulding under. Double line with 6in. x ¾in. p.t.g. the closet partition, and single line that of coal house. The window is to be similar to those of house, 3ft. 11in. x 2ft. 4in., but having beaded facings in place of moulded architraves. The doors are to be 6in. x 1in. p.t.g. beaded, ledged and braced, hung in 1¼in. frames, having ¾in. stops, with 16in. T hinges, and fastened with Vaughan's 6in. No. 60 rim locks. Finish outside with facings as window. The closet seats and riser are to be 1in. thick, the seat having neatly cut hole with lid to fit. Provide and place in position a 22-gauge galvanised iron soil bucket, and hang and fasten in weatherboards a door for access to it.

TANK STANDS.—Build tank stands with 6in. x 4in. uprights secured with 1in. dowels to 9in. x 9in. hardwood blocks and 6in. x 3in. top plates, and securely brace the top of frame and sheet it with 9in. x 1½in. slip tongued, put together with white lead and well nailed. Form floor under tank stand with 6in. x 3in. weathered plates, the centre one to be ¾in. higher than the outer ones, and covered over with 4½in. x 1¼in. decking, ¾in. apart and double nailed.

MEMORANDA.—With the exception of the weatherboards, all timbers to be painted or varnished are to be planed, and in all cases the nails are to be punched for stopping. Care is to be taken in ordering timbers that full lengths are ordered and delivered, as there are to be no butts where they can be avoided.

BRICKLAYER.

CHIMNEYS.—The chimneys are to be built with good, sound, hard-burnt bricks, well wetted before using, bedded solid and flushed in mortar composed of two parts clean sharp sand, and one part freshly-burnt ground stone lime, all exposed joints to be neatly pointed, and all weatherings to be executed in Portland cement mortar. The foundations are to be not less than 18in. in the ground, and are to have two footing courses. Turn fireplace arches on 2½in. x ½in. cambered wrought iron bars slit at ends and turned 3in. up and down. Keep kitchen fireplace 4ft. 6in. high to the springing. The flues are to be 9in. x 9in. smoothly parged, and are to have half-round cowls on top. Lay the hearths on proper arches with in no place less than 1½in. thick of best Portland cement, one part, to two parts clean sharp sand, smoothly trowelled flush with the floor. Set a stove with register, etc., complete in the kitchen, and build in register grate in parlour fireplace, building up the pockets in good hard-setting concrete, and pointing face plate with cement. The owner will provide the stove and grate.

DRAINAGE.—Provide and fix where directed two 9in. diameter dished yard-traps in good concrete, and allow for providing and laying one chain of 4in. glazed socket-pipe drain; carefully cement jointed.

PLUMBER.

IRON ROOFING.—Cover the roofs of house, verandah, and outbuilding with 26-gauge corrugated galvanised iron, to have two full corrugations, side lap, and 9in. end laps, and to be fixed on the acmè corrugated batten with 3in. acmè galvanised nails; the roll ridging to be 3lb. lead edged 26-gauge galvanised iron, and having 5lb. lead appings at junctions of ridge and hips.

FLASHINGS.—Gutter and step flash the chimney with 5lb. lead, let 1in. into brickwork joints, securely lead plugged and cemented. Flash head of verandah roof with 26-gauge galvanised iron 3lb. lead edged; let 3in. under boards and 9in. on roof, and put 16in. roll ridging 3lb. lead edged on hips. Flash the tank stand decking at ends and between the tanks with 26-gauge galvanised iron; let 3in. up under boards and 9in. under tanks. Flash exposed door and window heads with 26-gauge galvanised iron, and set window sills in flashed trays of No. 10 zinc.

SPOUTING.—The spouting for main eaves is to be 6in. O.G., and for verandah and outhouse 5in. O.G. 26-gauge galvanised iron, soldered outside and in, and fixed on stout galvanised iron brackets 2ft. 6in. apart. The downpipes are to be 3in. diameter 24-gauge, seamed and soldered.

SINK.—Provide and fix in porch a 20-gauge galvanised iron sink having brass grated washer, plug and chain, and a 24-gauge 2½in. diameter waste of galvanised iron to yard trap.

TANKS, ETC.—Provide and fix on stand two 400-gallon tanks of 24-gauge galvanised iron, riveted and soldered outside and in, with bottom and cover of heart timber, and having overflow as downpipes. Fix an interceptor bucket in top of tank inlet, having 4in. pipe standing up inside to within 3in. of top of the bucket and well stayed. Connect tanks together with 1in. galvanised gaspiping, and from this take ¾in. galvanised iron water service to sink and standpipe by washhouse, and furnish each service with ¾in. brass taps.

PAINTER AND PAPERHANGER.

Do all stopping with linseed oil putty.

The whole of the exterior wood and iron work usually painted is to get three good coats genuine white lead and linseed oil, and the whole of the exposed inside woodwork is to get one coat best glue size and two coats best hard-drying varnish.

The walls of bedrooms, parlour and passage are to be hung with No. 3 scrim, closely taped and sprinkled with ⅝in. tinned tacks, and over same hang wall papers of the average value of 1s. per roll, to be selected by the owner.

LAWN TENNIS.

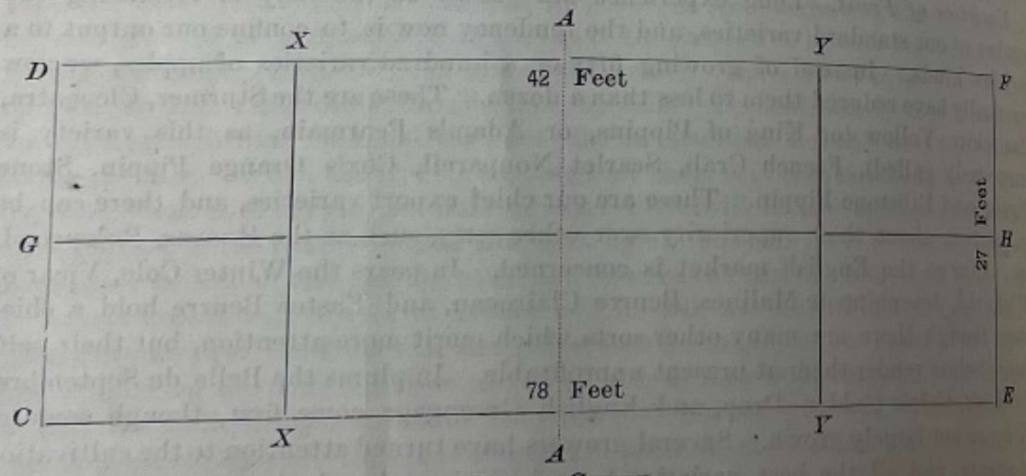
LAWS ADOPTED BY THE ENGLISH LAWN TENNIS ASSOCIATION.

THE SINGLE-HANDED GAME.

1. For the single-handed game, the court is 27ft. in width, and 78ft. in length. It is divided across the middle by a net, the ends of which are attached to the tops of two posts, *A* and *A*, which stand 3ft. outside the court on each side. The height of the net is 3ft. 6in. at the posts, and 3 feet at the centre. At each end of the court, parallel with the net, and at a distance of 39ft. from it, are drawn the *base-lines CD* and *EF*, the extremeties of which are connected by the *side-lines CE* and *DF*. Halfway between the side-lines, and parallel with them, is drawn the *half-court-line GH*, dividing the space on each side of the net into two equal parts, called the *right* and *left courts*. On each side of the net, at a distance of 21ft. from it, and parallel with it, are drawn the *service-lines XX* and *YY*.

2. and 3. Provide for the size of the ball, and that the decision of an umpire shall be final, the only appeal that can be made to a referee being on a point of law.

4. The choice of sides and the right of serving during the first game shall be decided by toss; provided that, if the winner of the toss choose the right to serve, the other player shall have the choice of sides, and *vice versâ*; and provided that the winner of the toss may, if he prefer it, require the other player to make the first choice.



SINGLE COURT.

5. The players shall stand on opposite sides of the net: the player who first delivers the ball shall be called the *server*, the other the *striker-out*.

6. At the end of the first game, the striker-out shall become server, and the server shall become striker-out; and so on alternately in the subsequent games of the set.

7. The server shall stand with one foot beyond (*i.e.*, farther from the net than) the base line, and with the other foot upon the base-line, and shall deliver the service from the right and left courts alternately, beginning from the right.

8. The ball served must drop within the service-line, half-court-line, and side-line of the court, which is diagonally opposite to that from which it was served, or upon any such line.

9. It is a *fault* if the service be delivered from the wrong court, or if the server do not stand as directed in Law 7, or if the ball served drop in the net or beyond the service line, or if it drop out of court or in the wrong court: it is not a *fault* if the server's foot, which is beyond the base-line, do not touch the ground at the moment at which the service is delivered.

10., 11. and 12. State that a fault may not be taken, but the server has the right of one more ball from the same court.

13. The service may not be *volleyed*—*i.e.*, taken before it touches the ground.

14. The server shall not serve until the striker-out is ready. If the latter attempt to return the service he shall be deemed to be ready.

15. A ball is *in-play* from the moment at which it is delivered in service (unless a fault) until it has been volleyed by the striker-out in his first stroke, or has dropped in the net or out of court, or has touched either of the players, or anything that he wears or carries, except his racket in the act of striking, or has been struck by either of the players with his racket more than once consecutively, or has been volleyed before it has passed over the net, or has failed to pass over the net before its first bound (except as provided in Law 17), or has touched the ground twice consecutively on either side of the net, though the second time may have been out of court.

16. It is a *let* if the ball served touch the net, provided the service be otherwise good; or if a service or fault be delivered when the striker-out is not ready; or if either player be prevented by an accident beyond his control from serving or returning the ball in-play. In case of a let, the service or stroke counts for nothing, and the server shall serve again.

17. It is a good return, although the ball touch the net; or, having passed outside either post, drop on or within any of the lines which bound the court into which it is returned.

18. The server wins a stroke, if the striker-out volley the service, or fail to return the service, or the ball in-play (except in the case of a let), or return the service or ball in-play so that it drop outside any of the lines which bound his opponent's court, or otherwise lose a stroke, as provided by Law 20.

19. The striker-out wins a stroke if the server serve two consecutive faults, or fail to return the ball in play (except in the case of a let), or return the ball in-play, so that it drop outside any of the lines which bound his opponent's court, or otherwise lose a stroke, as provided by Law 20.

20. Either player loses a stroke, if the ball in play touch him or anything that he wears or carries, except his racket in the act of striking; or if he touch or strike the ball in-play with his racket more than once consecutively; or if he touch the net or any of its supports while the ball is in-play; or if he volley the ball before it has passed the net.

21. On either player winning his first stroke, the score is called 15 for that player; on either player winning his second stroke, the score is called 30 for that player; on either player winning his third stroke, the score is called 40 for that player; and the fourth stroke won by either player is scored game for that player; except as below:—

If both players have won three strokes, the score is called deuce; and the next stroke won by either player is scored advantage for that player. If the same player win the next stroke, he wins the game; if he lose the next stroke, the score is again called deuce; and so on until either player win the two strokes