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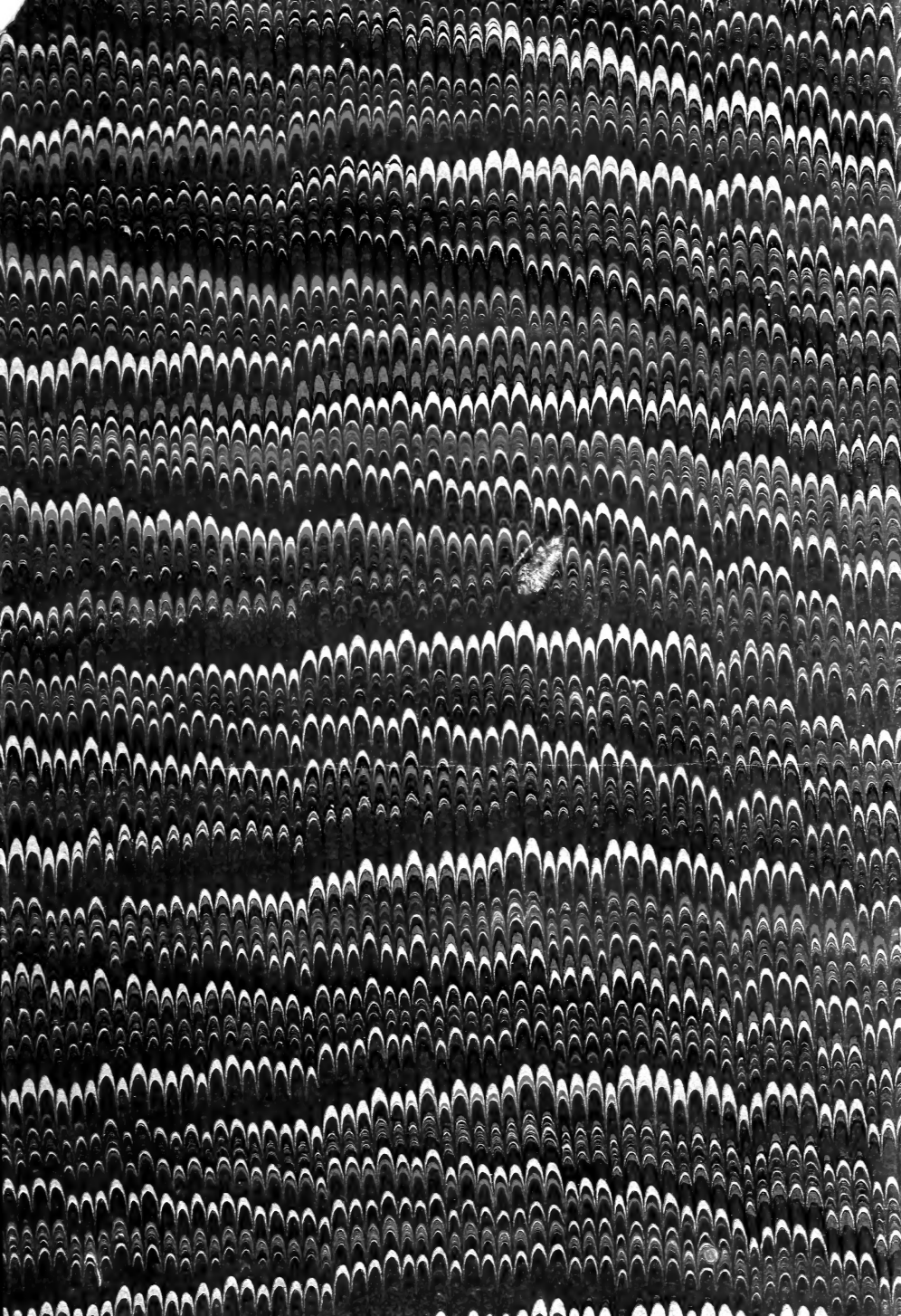
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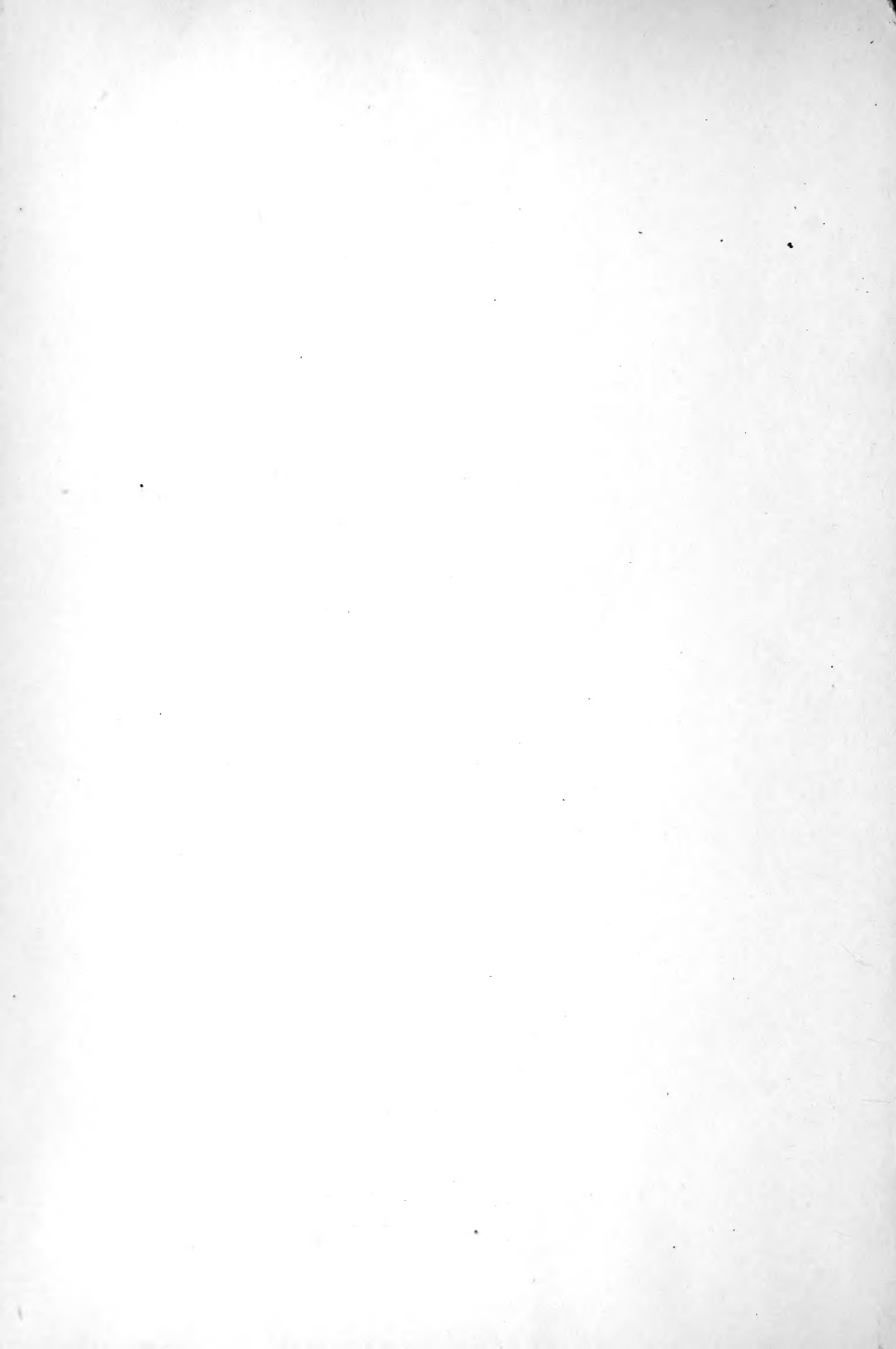
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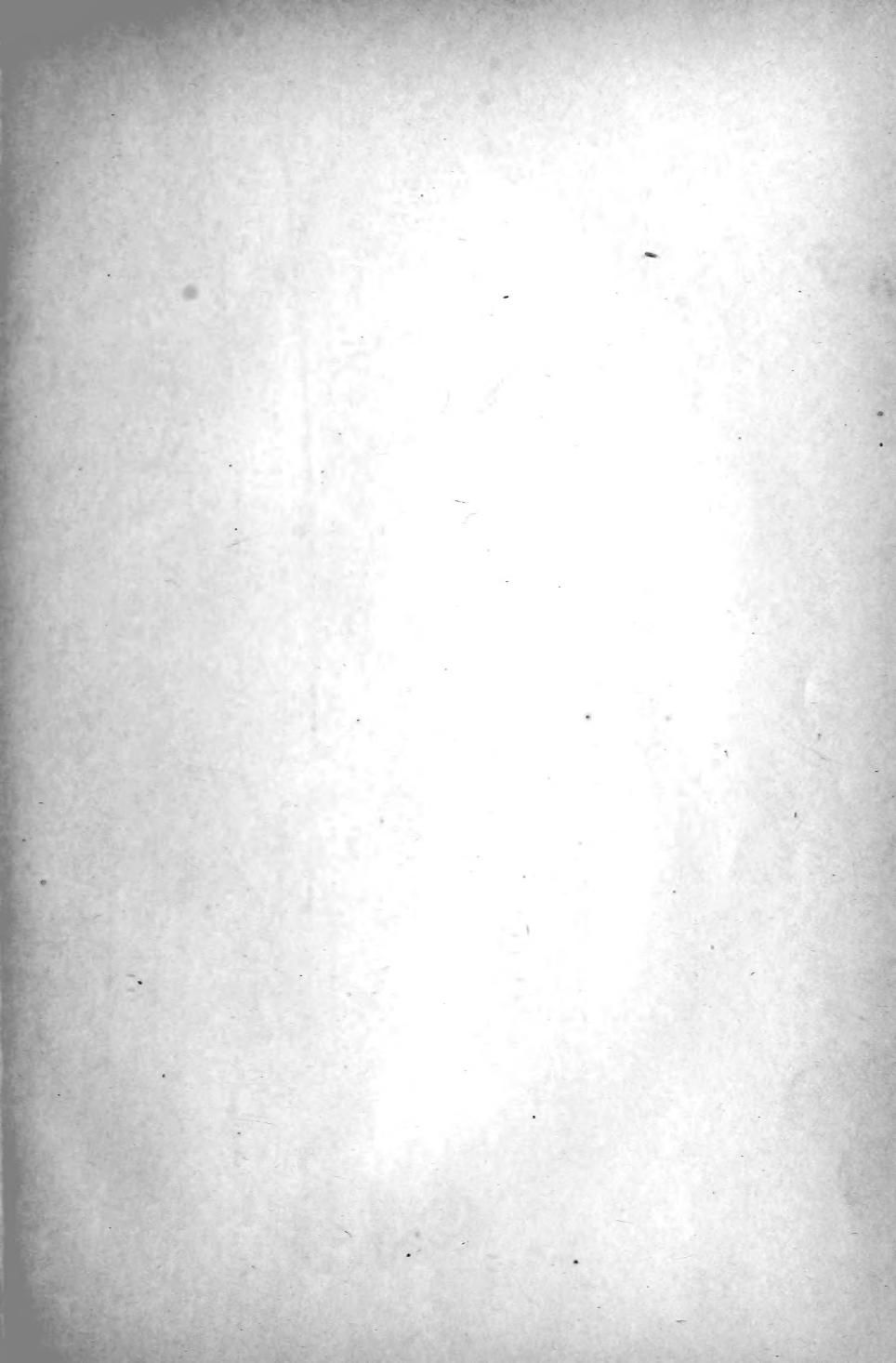
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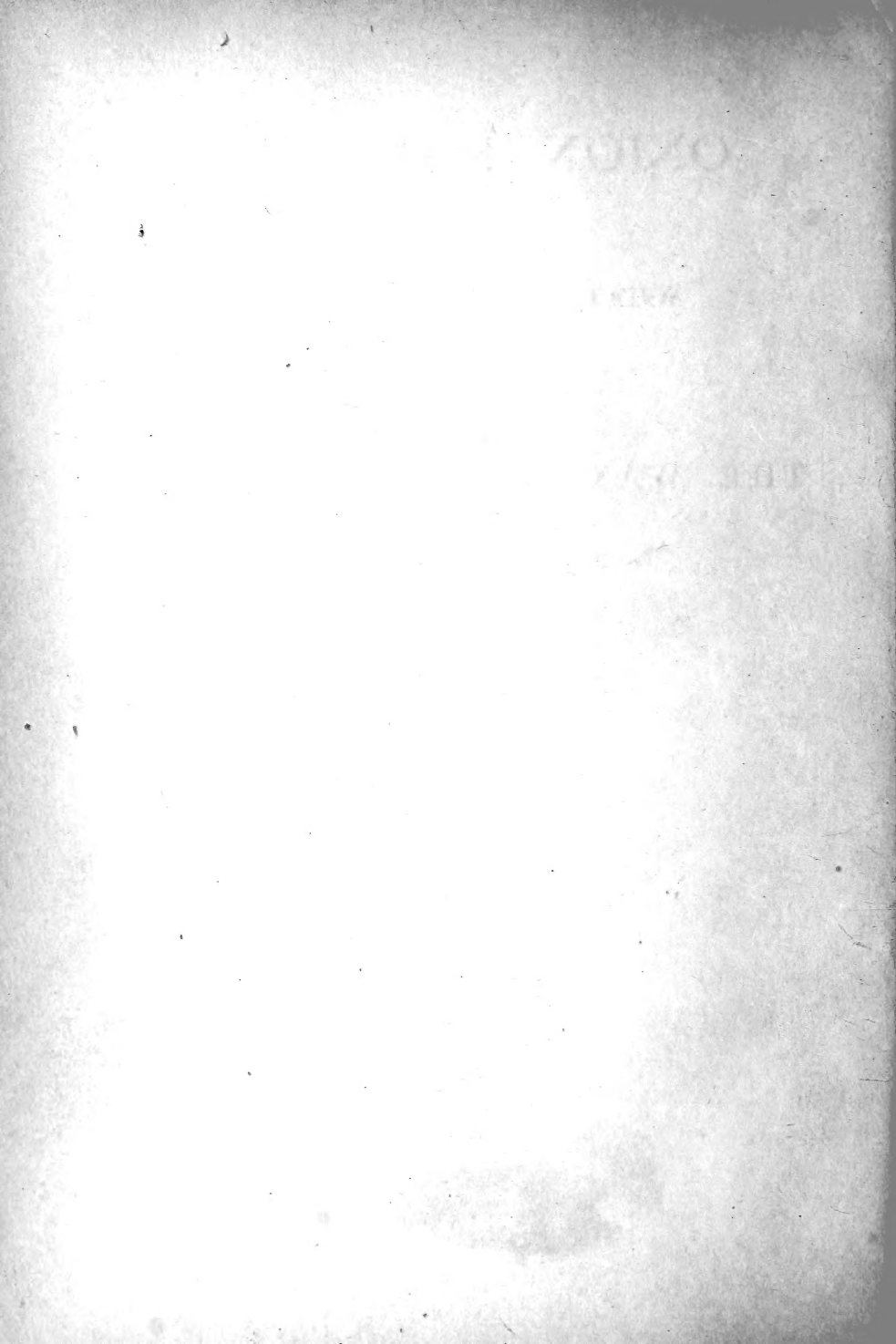














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ONION RAISING;

WHAT KINDS TO RAISE,

AND

<sup>c</sup>  
THE WAY TO RAISE THEM.

SIXTEENTH EDITION, (REVISED.)

JAMES J. H. GREGORY,

SEED GROWER, MARBLEHEAD, MASS.

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April 1914

# ONION RAISING.

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## WHY I WRITE THIS TREATISE.

IN common with my fellow-seedsmen I frequently receive letters from my farmer friends, in different parts of the United States, asking for information, on Onion Raising. It is impossible in a letter sheet to give sufficient minuteness of detail; I therefore send out this little treatise, in which I have endeavored to cover very minutely the whole ground of inquiry. I trust that it will prove acceptable.

## SELECTING THE SOIL.

Onions are an exception to the general rule,—they thrive best on old ground, with the exception of an increased liability to injury from rust or smut. I recently examined an acre of land which had been planted continuously with onions for three generations without perceptible decrease in the quantity or quality of the crop.

Onions are sometimes successfully raised by plowing up old pasture land in September, thoroughly harrowing it before frost sets in, and in the spring working in fine manure very thoroughly with the harrow and cultivator. The result of such planting is to get a crop very free from weeds, with onions usually coarse, and more or less of scallions.

Onions can be raised on a variety of soils, but yield the most satisfactory returns on a sandy loam, a gravelly soil, or, to state a general rule, on those soils which are light in structure. As onions are brought on the heavier soils, the first effect will be a deterioration in their appearance, the outer skin of the yellow varieties, losing its fine, clear, translucent yellow, and becoming thicker, duller, and less attractive in appearance. If planted on a wet or very heavy soil, the crop will mature late, if it matures at all, giving a large proportion of that dread of the onion grower, scallions, or "scullions" as farmers term them, meaning those whose growth runs mostly to the neck, forming little or no bulb or bottom. With plenty of manure onions will thrive well on soil that is very gravelly. I have seen very large crops grown on Marblehead Neck, on land so stony, that, after a rain, on an area of many square yards not a particle of soil could be seen, nothing but small angular fragments of porphyry, with thrifty onions springing as it were out of the very rocks. Let it be understood, however, that this soil was not of a leachy nature, but rested on a hard-pan bottom. The area of land selected should be free of all large stones, as such interfere seriously with the straightness of the rows, the planting, hoeing and general cultivation of so small-sized a product. Ultimately, good cultivators clear their onion grounds of large loose rocks by blasting or sinking them; obviously, the sooner this is done, the larger are the returns received from such judicious investments. The land should be laid out in as nearly a square as practicable, as this facilitates estimates of manure, seed, and crops, gives greater regularity to the work, and economizes in the cultivation of a crop which requires a great deal of passing over. To protect the crop from the washing of heavy showers, the land should be level or very nearly so, otherwise a rush of

water will bare the roots of some, and heap the earth around the necks of others, to the injury of each.

### PREPARING THE SOIL.

Don't plant a weedy soil to onions, or land which abounds in witch, or couch grass; if you do, you will repent it on your hands and knees all summer long, for such soil will usually require two more weedings than that on which weeds have not been allowed to ripen their seed. To have to keep down witch grass with your fingers in an onion bed is a miserable business, tearing up the onions and your patience at the same time; better delay a year, and meanwhile clear the land thoroughly by a diligent use of the cultivator and hoe, finishing in the fall by throwing the land into ridges that the freezings and thawings of winter may act destructively on the roots of the witch grass. Should any scattered shoot of this grass show itself in the spring, let the roots be carefully removed with a fork or spade before the land is plowed.

When onions are planted on land full of the seed of weeds it is well, if the season is an early one, to give sufficient time for the first crop of weed seed to start before planting the onions.

In the Eastern States it is found, as a general rule, that success with the first crop of onions is affected by the crop which grew in the land the previous year, and that onions will follow carrots better than any other crop; next to carrots, corn and potatoes are ranked as good preparers of the ground, while to succeed well with onions where cabbage or beets were raised the previous year is comparatively rare. Were there no other reason, the clean tilth which carrots insure makes it an excellent crop to precede onions. In the fertile lands of the west, the method of procedure is briefly this: Land on which grows

the bush-hazel is selected, if accessible, the bushes cut down and the turf surface but little more than pared in spring with the plow. In this condition it is usually allowed to remain a season, exposed to the drying effects of the sun, when it is most thoroughly harrowed and raked, and all the numerous roots and waste are burnt, the land plowed to a moderate depth, and the seed sown either broadcast or in drills. Should the early part of the season prove very wet, the crop sowed broadcast is at times smothered under a rapid growth of weeds, while with a favoring season as high as 800 bushels to the acre have been harvested.

After the harvesting of the crop which is to precede onions, let the land have a fall plowing, and be thrown up into ridges, which will not only help destroy noxious weeds and witch grass as above stated, but will leave the land light, in a condition to be worked successfully early in the spring—a great desideratum for a crop that usually requires the entire season to mature it.

#### THE MANURE.

Onions require the very best of manure, in the most tempting condition, and plenty of it at that. Peruvian guano, fish guano, pig manure, barn manure, night-soil, kelp, muscle mud, superphosphate of lime, wood ashes, and muck are, either alone or in compost, all excellent food for the onion. Old ground, to maintain it in first-rate condition, should receive from six to eight cords of manure to the acre; while new onion ground, to get it in first-rate condition, should receive from eight to ten cords of manure. When Peruvian guano was held at about sixty dollars per ton, experienced farmers believed that no purchased manure paid as well as this on old beds, provided two applications were made, one

of about 500 lbs. to the acre, to be raked in at the time of planting, and the other of like amount to be applied broadcast when the onions were about half grown. Those who used but one application at the time of sowing were apt to see surprising effects in a fine growth up to the period of half maturity of the crop, and an equally surprisingly effect in but little growth from this time through the remainder of the season. Those who have used guano freely on their onion lands in the vicinity of Philadelphia assert that one singular result is, that, after applying it for three years in succession, the seed onions for the most part fail to sprout in such soil, and when seed is planted it makes but little growth after vegetating. As far as I have observed, superphosphate of lime used as a manure for a series of years is apt to give the first of these results. Pig manure is held in high esteem by many successful growers of onions in southern New England. Fish guano applied at the rate of a ton to the acre has given very fine crops.

In the vicinity of large towns, where night-soil can be readily obtained, no more efficient manure can be applied than a compost of this and muck that has been exposed to a winter's frost, or good loam, in the proportion of three parts muck or loam to one part night-soil. If with this compost barn manure and sea manure are mixed, so much the better; for it is a rule for this as for other crops that a combination of manures in an arithmetical ratio will produce results approaching a geometrical ratio. To make a compost of loam or muck and night-soil, select a spot very near the piece to be planted, and cover the ground with either to the depth of a foot or eighteen inches; then raise a bank of the same material surrounding this floor to the height of three or four feet, with a thickness of from four to six feet.

The carts containing night-soil are backed up against this receptacle, and the door being unscrewed, the contents shoot out. If barn manure is used, it usually forms part of the sides of the receptacle. During the winter the frosts act on the heap to the further sweetness and disintegrating of it, and towards spring the mass is pitched most thoroughly over, being mixed and made as fine as possible,—sand when obtainable having been either previously, or being subsequently liberally mixed with it, which so “cuts” or separates it that it remains light and fine. After an interval of about a fortnight, allowing time for fermentation, the heap is again pitched over for fining and mixing, and, occasionally, three mixings are made. It would be well for tourists to avoid the onion districts at this season of the year, as a little experience will amply satisfy them.

These composts should not be made on the ground where the onions are to be planted, for neither onions nor any other crop will grow on such spots the same season.

Where superphosphate of lime is used, it is best to make two applications, as with guano. The results of the use of superphosphates are not always satisfactory, but I have seen eight hundred pounds applied to the acre produce as good results as seven cords of rich compost applied side by side.

Muscle mud obtained from the sea-coast is rarely used alone, though large crops are sometimes raised on old onion ground by the application of this alone, at the rate of eight cords to the acre. It appears to give the best results a few miles inland. The strength and consequent value of this manure varies considerably; and here let me add that the value of all animal manures will be found to vary greatly; other things being equal, the higher feeding the animal receives, the better the manure.



Wood ashes are generally used in connection with other manures at the rate of about 200 bushels to the acre. Wood ashes should never be *combined* with other manures, as it will set the ammonia free, and thus deteriorate their quality. Use ashes either by scattering it on the surface at the time of planting, or when the crop is about half grown.

In the vicinity of large towns, of all manures obtained outside the barnyard, night-soil is the cheapest. The first farmer who used it in this locality, comparatively but a few years ago, was universally jeered at by his comrades, but now nearly all of our annual crop of 50,000 bushels is fed principally on this manure.

The effect of kelp, (by this I mean the sea-manure which is thrown up by the storms on very bold shores,) when used as the principal manure, is to give a coarse onion, and a late crop; so late as oftentimes to be in quite a green state at the close of the season, requiring extra labor and care to get it in market condition. In seasons of great drought, however, kelp serves an excellent end, in so retarding the crop that it is not prematurely ripened. In the excessively dry season of 1864, crops along the sea-coast manured with kelp, in many instances yielded double those manured with barnyard and other manures.

The manure is managed most conveniently by dropping it on the land in quite small heaps, at regular intervals, at convenient distance for spreading. I close this paragraph on manures by emphasizing the utility of a *thorough fining of it*.

#### PLOWING.

The farmer who brings up the sub-soil on his onion bed, will find he has made a mistake. Onions do not require deep

plowing ; four or five inches is sufficient depth to insure a good crop. One of the finest pieces I ever saw was managed by carting on the manure in the fall, and simply giving it a thorough working into the soil with an ordinary one-horse cultivator in the spring, after which the land was raked and planted, no plow or any implement other than the cultivator having been used. In this instance the soil was naturally quite light. In the west, the ground having been plowed in the fall, it frequently receives only a cultivating or harrowing in the spring.

As the great object is to get the land in a thoroughly fine condition, to facilitate the covering of the seed with fine earth, to leave the soil light that there may be a vigorous growth of the plants, and to leave the land in good working condition for after culture, no labor should be spared to attain this end. On most soils the ground should be plowed, cross-plowed, and thoroughly cultivated. If, from the backwardness of the spring and the consequent wet state of the land, the soil should still be lumpy, it should be thoroughly rolled before raking for planting, and it may be well to brush-harrow it. As onions grown from the seed usually require the whole season to ripen, the onion grower breaks ground first of all in his onion bed, springing to this as early in the season as is possible to work the land into a light and fine condition.

### THE SEED.

In some localities three pounds of seed was thought sufficient to an acre ; afterward this was increased to three and a half, and then to four ; and now, when raised for tracing, five and six pounds are sometimes planted. As a general rule, three and one-half pounds will be found sufficient for an acre ; and when land is very heavily manured, four pounds may be

planted with profit. Land that is planted to onions the first time requires more seed than old land. If it is designed to pull the onions when small for bunching for the early market, then seven or eight pounds of seed will be required for an acre. If the intent is to raise the very small onions known as "setts," which are stored over winter to be planted in the spring to produce early onions, than a much larger quantity will be required. On old beds where rust abounds, I have known sixteen pounds of seed sown to the acre. Of course it is of the first importance that the seed should be reliable.

Compared with the average return of the crop, the cost of good seed for planting an acre of land to onions, even at the highest prices, is not to be considered a moment beside the acceptance of doubtful seed *even as a gift*; yet every onion-growing community has had its stories to tell of cultivators who have thrown away their time, labor and manure, by purchasing doubtful seed at a little lower figure than that at which reliable seed could be procured. New seed will sometimes fail to vegetate if planted a little too deep, or if snow falls and remains on the ground after planting, or a rain falls after raking and just before planting, though part of the same piece planted but an hour before may come finely.

The usual test for good seed, that is, seed that will vegetate, is the sinking of it; that which will sink being considered reliable, and that which floats being considered worthless. This will answer as a general rule, but it is not wholly reliable. Seed that will sink will not always vegetate, while seed that will float, under some circumstances, will vegetate. Any farmer who tests his seed by the sinking process will find that some of that which floats will vegetate, while no farmer is safe in planting seed that is two years old, though it will sink. Some farmers ascertained this latter fact to their

great loss during the spring of 1864. If the season is an average one, such seed as is two years old can be relied upon if it has weight sufficient to sink it; but such a season as the spring of 1864, being unusually wet, much of the two-years seed that was sown, though sown by farmers who had themselves raised it, failed to vegetate.

The lesson to be learned by such unfortunate result is, that it is never perfectly safe to sow seed that is two years old, and that the only way a prudent cultivator will use it will be when mixed with a large proportion of fresh seed. There are two special risks incidental to the sinking test; first, the danger that the seed will not be thoroughly dried, as onion seed when containing sufficient moisture to cause it to sprout if stored in bulk, appears dry to the eye; again, the vitality of onion seed is very apt to be hurt by the drying of it, particularly so, as it is usually deferred until just previous to planting, when matters are greatly hurried, (as the risk of injury through this process is considered too great to permit it to be sunk earlier in the season,) and then it is likely to be exposed too near the kitchen stove. Seed thoroughly winnowed by the wind, on a large sheet spread on some open spot, free from all eddies, will be found to give a quality very nearly or quite as free from light seed as the sinking process. As the objection just presented does not lie against this process, it is decidedly preferable. The only reliable test for the vitality of any variety of seed is that which includes all the usual conditions of growth. Testing by planting in a hot-house or in a box in a common house, is not fully reliable, because the seed are not surrounded by the conditions of natural growth,—they then have a temperature very mild, and very nearly constant, with no excess of moisture or dryness,—whereas the natural condition of vegetation includes the very varying temperature of early

spring, usually a great excess of moisture and a low degree of heat, all of which causes, either single or combined in their effects, draw largely on the vital power of the seed. Hence, seed that under the favoring influences of the hot-house or kitchen may vegetate, may not have sufficient vitality to overcome the excessive cold or moisture of the garden. The result, therefore, of the usual experimental tests can be relied upon as giving only an approximation to the truth.

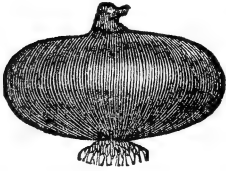
Among these approximate tests is the simple one of partially filling a tumbler with cotton-wool, pouring in a little water, not sufficient to cover the cotton, then sprinkling a certain number of seed on the cotton, covering it with a little additional cotton to keep the moisture in. Another simple test is to sprinkle the seed to be tested on a moist woolen cloth, fold the cloth together, and put it in a place moderately warm. The proportion of seed that is good will be known by the proportion that sprout. Experienced eyes can learn something by the appearance and feel of the seed. Old seed require several days longer to vegetate than new.

#### WHAT KIND OF ONIONS TO PLANT.

Foreign catalogues describe a score and more varieties of onion which are raised in Europe, but as far as experiments have been made with them in this country, it has been found that European-grown onion seed cannot be relied upon to give as good bulbs as American-grown of the same varieties; while many sorts are not adapted to our climate. A measure of the dubious quality of this foreign seed is well indicated by the lower price at which it is generally catalogued.

Of those grown from seed, the Large Red, Yellow, and White are the three standard varieties in the United States.

The Large Red is commonly known as the Wethersfield onion, it having been extensively cultivated in that locality at an early day in onion culture. This is commonly divided into four varieties, viz :

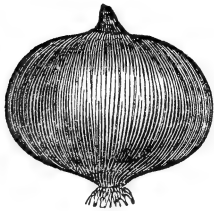


LATE LARGE RED (see illustration) is a very large, thick, late onion, attaining a diameter of from three to six inches, and on the fertile prairies of the west, not unfrequently eight inches.

SECOND EARLY, which differs only in size and time of ripening ; being rather flatter than the large sort, not so large, and coming to maturity earlier.

THE EARLY FLAT RED is still flatter in form, smaller in size, rather light-colored, and matures earliest of the three sorts ; as early as the last of July.

There is also a fine GLOBE variety of EARLY RED onion (see illustration) in cultivation, which comes to maturity about a week earlier than the Danvers Early, is of good size and flavor, and in color usually of a very bright, handsome red. The seed of this variety is much sought after by onion-growers, but it is difficult to procure in a pure state.



There is a very handsome late variety of onion known as Southport Red Globe, which originated in Southport, Connecticut. It is quite late and therefore not safe to plant north of Connecticut.

There are four varieties of the Yellow onion in cultivation, of which the Yellow Flat, called also Yellow Dutch, and Strasburg, and in the Eastern States the "Silverskin," is the

parent. These varieties are the Common Flat onion, the Early Cracker onion, the Danvers onion, and the Intermediate onion.

The COMMON FLAT (incorrectly called Silverskin in the Eastern States, a name which properly belongs to the White Portugal) is not so generally cultivated since the Early Danvers was introduced, as formerly. It grows to a diameter of about three inches, is compact in its structure, and of good flavor. It is a good keeper.



THE EARLY CRACKER onion (see illustration) is very thin, of a beautiful honey color, quite compact, and oftentimes hollows a little at the bulb around the neck. It matures about a week or ten days earlier than the Early Danvers, and in fineness of structure and delicacy of flavor is unsurpassed.

The great practical objection to the cultivation of this onion on an extensive scale is the extreme care required in handling it; it needs care to prevent bruising and consequent rotting. For using in the fall, this objection would not lie against it with any great force; this and the Early Flat Red are excellent varieties for raising where the seasons are short. It grows to a diameter of from two and a half to four inches.

THE EARLY ROUND DANVERS YELLOW onion, was originated by Mr. Daniel Buxton and brother of South Danvers, by careful selections of the roundest and earliest specimens from the Yellow Flat onion. The Danvers is an early onion, maturing within about a week or ten days of the Early Red and Cracker onions. It is very prolific, and, like the Red Globe onion, gives larger crops by about one-third than the flat varieties. When each are seen just before pulling, the difference in the bulk of the crop is not very apparent, but when

measured, the globular form of the Danvers "tells." When overgrown by too thin planting of seed this onion is at times rather coarse in structure, but ordinarily it is very compact, fine of structure, heavy, and a good keeper. When well ripened, I find it keeps equally well under the same circumstances as the common Flat onion. The earliness of the Danvers onion is a great gain in short seasons, or very wet ones; and as this onion begins to form its bulb quite early in its growth, ("bottoms down" is the farmer's phrase,) it presents marked advantages over the flat sorts for early marketing. In the Boston market the Danvers sells for somewhat more a barrel than the Red.

Having had considerable experience in selecting onions for seed purposes, I find that I can obtain a much greater proportion of handsome, well-developed seed onions from onions that have been raised from seed stock that has been carefully selected through a long series of years, and am led to believe that there can be "pedigree" onions as well as pedigree cattle, and that seed raised from them can be relied on under the same conditions to give a handsomer onion than can the average of seed.

#### WHITE PORTUGAL.

The cultivation of this early onion is mostly confined to the raising and planting of what are known as "Setts" or Button onions, or onions for early family use, as it is a poor keeper. It is a sweet, mild onion, of a good size for family use, though averaging considerably smaller than the varieties that have been described. Here let me say, that, for family use, except for frying, the common onions of the market are much too large to be economical,—the two outer layers of an onion four inches and upwards in diameter, though mak-



ing up about half the bulk of the onion, are usually coarse and tough, and slough off when boiled. The sweetest, tenderest, and most economical onions for this purpose of the yellow sort are those that are from two to three inches in diameter.

### THE QUEEN.

Of the newer sorts, the "Queen," a white English variety growing to from two to two and one-half inches in diameter, is doubtless the earliest at present known ; so early that under favorable circumstances it may grow to a market size about as soon as those raised from Philadelphia sets.

### SOUTHPORT WHITE GLOBE.

This is a large, globular, white variety, that is about as round and, when cured in the shade, about as white as a snow-ball, being the handsomest of all onions. It is too late to be planted with safety in latitude north of southern Connecticut.

### MARZAJOLE, MAMMOTH TRIPOLI, NASBEY'S MAMMOTH AND GIANT ROCCA.

Are European varieties that grow to a mammoth size in Southern Europe where for their mild flavor they are held in high esteem. Grown in this country they are of a milder flavor than our common sorts, but, though they grow larger, do not attain to the size they acquire in Europe, and though excellent for use in a green state are not good as keepers.

There are usually the distinctions I have here stated between the late and early varieties ; but some times drought and other causes will almost destroy these distinctions, ripening the very early and medium early sorts at the same time.

## WHAT ONIONS SHALL I RAISE?

Having described the standard varieties, a beginner may query in his mind as to what variety would be most profitable and most reliable for him to cultivate.

The Danvers onion is the handsomest shaped, yields as much as any other sort, and more than any of the flat varieties, per acre. In the town of Marblehead, over nine hundred bushels have been raised on one acre of land. It is an onion very popular in the Eastern market and in Eastern Massachusetts is raised to almost the exclusion of any other variety. The Large Red onion is quite a favorite in the west, and is considered by some dealers to be the best variety for shipping purposes, though the Danvers is also shipped largely. Those who live in the latitude where the onion is difficult to mature from the seed in one year, affirm that the Red onion will mature farther south than any other variety.

After all, whatever suggestions may be offered, the local demand will do most for settling this point. Aside from this, I would recommend the Early Red Globe Danvers as, *on the whole*, the most desirable sort. The Red Globe is somewhat hardier than the Danvers.

## ONION SETTS OR BUTTON ONION.

In that portion of the United States south of the vicinity of New York City, onions from seed raised as far south as the Middle States cannot be relied on to mature the first year, owing to the extreme heat of the climate forcing the formation of the bulb and drying down the top quite early in the season. *But if the seed was grown in the Northern States from carefully selected stock*, it will mature onions the first season when planted in the Southern States, as I learn from

several of my correspondents, some of whom have grown them of market size the first season as far south as Texas. As a rule such onions are hardly as large as those grown farther north, but yet amply large enough for market. To give the rule concisely, if gardeners in the south wish to raise onions from the black seed so that they will grow to market size the first season, they should procure *seed grown as far north as possible*; and *vice versa*, gardeners in the North who wish to grow their own setts *should procure southern grown seed*. If in these southern latitudes two years are given to the maturing of the crop, the first year, the ground is prepared as already directed, excepting that it is but lightly manured; broad, shallow drills, from one to two inches in width, are made about ten inches apart, and these are sown early in spring, very thickly, at the rate of about thirty pounds to the acre, and the crop becomes mature in July, when it is pulled and stored in cool, airy lofts, being spread very thinly over the floor,—those raised from the White Portugal onion to a depth of about two inches, and those from the yellow sorts to a depth of about four inches. A gentle raking occasionally is of advantage to promote dryness and to prevent sprouting. The yellow variety is the best for keeping, and hence will bear the confinement incident to transportation with less injury; but the clean, white appearance of the onion raised from the white setts gives them the preference in the market. Attempts are often made in the north by market-gardeners to raise their own setts and thus save the large outlay often required to purchase them,—for most of the early onions now used in the northern cities are raised from the setts. The attempts to raise them in the north were formerly for the most part a failure; a large proportion of the setts so raised pushing seed shoots and thus spoiling the onion for market purposes, for the reason that northern grown seed

was used. The true sett is an onion that has been checked in its annual growth and dried down before it has matured,—hence it has an additional growth to make before its annual growth is matured, and before this there can be no seed shoot pushed, for the onion is a biennial plant and the seed shoot belongs to the second year of its growth.

Setts are planted in rows about ten inches apart, and two or three inches distant in the row. As the ground worms are very apt to remove them when first planted, the bed should be occasionally examined. Some roll them immediately after planting, others hold to dropping them in shallow drills, not covering them at all with earth.

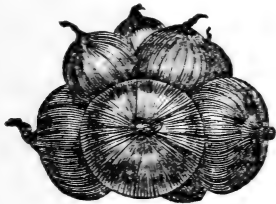
Onion setts vary in size from a pea to a hazel-nut. The smaller the size of the setts, the greater the number of onions contained in a given quantity; but many find it for their interest to purchase setts of a good size, as they yield larger onions. Among the market-gardeners in the vicinity of the large cities onion setts are very extensively planted, some planting as high as one hundred and fifty bushels annually. The quantity planted per acre varies with the size, from six to ten bushels.

#### RARERIPES.

Rareripes are onions raised by planting out bulbs of the growth of the previous season. The Rareripec oftentimes differs from the onion sett only in being a matured onion, as frequently they are about as small as the setts. The method of raising them is the same as that of raising early onions from setts, with the difference of planting them at times at greater distance apart in the row proportionate with their greater size. The raising of Rareripes is a very profitable way of disposing of such onions as are badly sprouted, are very

small, or in any way unprofitable for marketing. A seed shoot may be uniformly expected from each onion; but as this greatly deteriorates the quality of the Rareripe, making it tough and woody in structure, it should always be cut off. If cut off before the swelled growth appears, (a striking characteristic of the onion family and a proof of the skill of the Divine Architect, in strengthening by so simple a process the tall, thin stalk designed to support the heavy seed head,) it will again shoot up; wait, therefore, until this swelling begins to show itself, and then cut below it, and no more trouble from this source will ensue. The smaller the onions planted as Rareripes, the handsomer will be the crop,—the very small ones producing each one handsome round onion, while the large ones produce two or more which are irregular in form.

#### POTATO ONIONS, TOP ONIONS AND SHALLOTS.



Potato onions, (see engraving,) Top onions and Shallots are thought by some to have originated from the common onion. It is certain that at times all three of these varieties are sported by the common onion.

In a large field of seed onions, occasionally small onions will be found, growing in place of seed, and these onions when set out the ensuing spring will vegetate and develop readily, but they will not always in turn yield the like, *i. e.*, Top onions.

Potato onions, or multiplying onions, as they are sometimes called, are a thick, hard-fleshed variety, very mild and pleasant to the taste, and tender if eaten soon after gathering, but they grow to be tough as the season advances. They are poor keepers, unless spread very thinly in some dry

apartment. They are propagated by planting the bulbs in drills, fourteen inches apart, the largest ones six, the smaller four inches apart in the row, and the smallest ones two inches. The small ones rapidly increase and make onions from two to three inches in diameter, while the larger ones divide and make from four to a dozen or even sixteen (usually from five to eight) small, irregularly shaped onions. It will be seen that the larger bulbs answer the same purpose as the seed in the common onion ; hence to have onions for sale and yet maintain the stock, it is necessary that both sizes should be planted.

The Potato onion should be indulged for its best development in a soil rather moister than the varieties from seed. The advantage of the Potato onion is its earliness, and the fact that it is not as liable to injury from the onion maggot, when that abounds, as the common sort. I have seen an instance where, on half an acre of each growing side by side, the common onion (that raised from seed) was almost wholly destroyed, while the Potato onion was nearly uninjured.

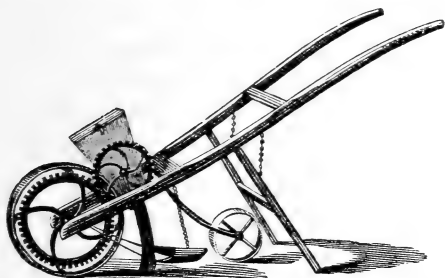
Shallots differ from Potato onions principally in their characteristics of *always* multiplying ; a Shallot *never grows into a large round* onion, but always multiplies itself, forming bulbs that average more oblong and are usually smaller than those of the Potato onion. I find them occasionally pushing a seed shoot, which I have never seen in the Potato onion. Their habit of growth is finer, making a longer and more slender leaf than the Potato onion. They are mild of flavor, and greatly excel every other variety of the onion family in their keeping properties : with little care they may be kept the year round. All seedsmen do not know the difference between the Potato onion and the Shallot. Within a few years I have twice had Shallots sent me under the name "Potato onion."

Top onions are propagated from little bulbs, which grow in this variety where the seeds grow in the common sorts. They grow to a large size, are pleasant, mild flavored, rather coarsely and loosely made up, and have the reputation of being poor keepers. Raised like the Potato onion.

### SEED SOWING MACHINES.

There are a variety of machines in the market for sowing onion and other seed, but most or all of them can be arranged in four classes, *viz*: Brush Sowers, Snap Sowers, Drop Sowers and Agitators.

Brush machines are those in which the seed is forced out by a brush contained in the seed box. The characteristic feature in this class of seed planters is of English origin, and has passed through various modifications in this country.

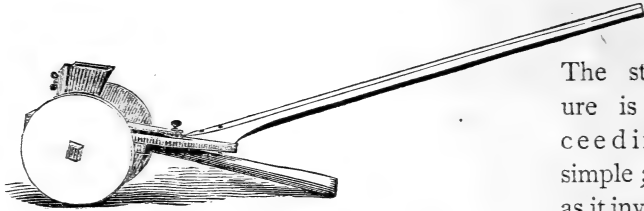


The Brush machine, an engraving of which is here presented, makes the drills, drops the seed, covers and rolls it; it is adapted for planting all the common root crops.

The rows in this machine are marked out by a chain, two of which hang near the handles and drag on the ground, being used alternately. The wheel is pushed along the mark made by the chain.

The principle on which the "Snap" machine is founded is the securing the flow of seed through the aperture by a jerking motion, which is usually effected by a spring which makes a snapping noise when set free.

One of the machines built on this principle is known as the Danvers Onion Sower. (See engraving.)



The structure is exceedingly simple; and as it involves

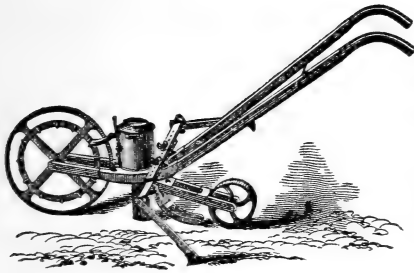
but few parts, and hence is but little liable to get out of order, and when out of order can readily be repaired by any blacksmith, it was quite a favorite with onion-raisers, but improved implements have to a large degree taken the place of it.

The Danvers machine opens the furrows, drops the seed, covers it, but does not roll it. Farmers usually attach an old horseshoe to the end of the seed coverer, which gives sufficient weight to make it answer the purposes of a roller.

Matthews' Garden Seed Drill is a fine example of the seed planters on the "agitator" principle. This agitator is a finger of iron in the seed box which projects just over the orifice from which the seed drops and by a motion given it by the revolving of the wheel, keeps the seed continually stirred and thus prevents its clogging,—a trouble to every gardener when planting such seed as beet and parsnip. Were I called upon to recommend a seed sower for general work it would be the Matthews; all in the market have more or less of good qualities but I have found that the Matthews combines more than any other one.

On light soil hand cultivators are useful. These are now





sold combined with seed sowers, so that the same implement may be used for either purpose.

The Matthews' hand Cultivator is a good illustration of this class. (See engraving.)

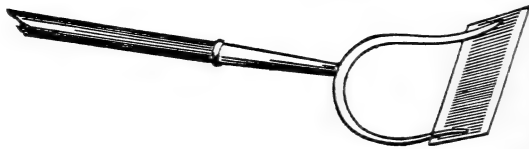
In these machines the seed falls through holes in little slides of tin, different slides being substituted as the seed to be sown is larger or smaller, or the quantity to be planted is greater or less. Farmers will often find it for their interest to enlarge or diminish the size of these holes. The holes in the tin of the Danvers sower, to give a liberal sowing of about four and a half pounds to the acre, should be large enough to drop ten to fourteen onion seed to each snap. By putting the hand under and counting the seed which falls in a dozen snappings of the machine, a reliable average can be ascertained. As the size of onion seed often varies, no particular size of hole can be relied upon; it must be tested for each season. Another convenient test is to trundle the machine over the barn floor, or a newspaper spread and secured in the field, and observe how thickly the seed fall. For a beginner the first test is the better one.

Of the sower which drops the seed in hills I will treat presently under the head of "Onions with Carrots."

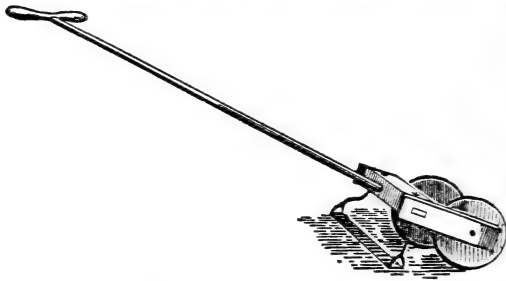
### PLANTING THE SEED.

Having selected our seed sower and regulated it, the next step is to plant the seed. It is exceedingly necessary that the first row planted should be straight, as this becomes a measure of straightness for all the others. A steady hand and

a straight eye are of great value here ; but with a little practice a good degree of accuracy can be obtained by most persons, though a few will always find it for their profit to hire some experienced hand. Two or three sticks may serve to mark out the first row, and by keeping these bearing on each other as the machine is pushed along, the first line must be a straight line. In some machines the chains which drag from the handle, and in others the wheels, serve to mark



(see engraving) to be used will be of a constant width it is



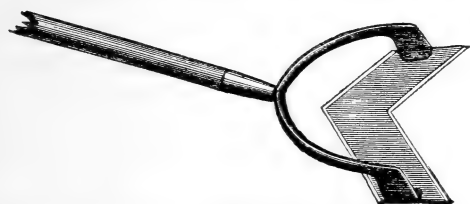
out the rows. As the Scuffle Hoes (see engraving) and Wheel Hoes (see engraving) to be used will be of a constant width it is important that the width of the rows should be kept constant, particularly that they should not be brought nearer together than the distance fixed upon.

The distance between the rows varies in different sections from twelve to fourteen inches ; when seed are planted for setts, ten inches is the usual distance between the drills.

The various hoes used in weeding are pushed before the operator and again drawn quickly back, the operator taking short steps, and making the hoe cut in both the forward and backward slides. After the tops get so far grown as to bend over into the rows, they are apt to be caught between the

wheel and axle of the wheel hoe ; hence from thence forward the scuffle hoe should be used.

Farmers sometimes make their own scuffle hoes out of a



piece of an old saw, the teeth answering a good purpose in cutting off the weeds.

The V-shaped hoe, (see engraving,) called Howard's Patent, will do excellent service if a weight of about two pounds be fastened around the handle near the ground.

In Eastern Massachusetts fourteen inches is the usual distance between the rows ; while in Southern New England and parts of the West, twelve inches is preferred.

Before planting the seed it should be carefully examined, to see that it is perfectly clean from small stones, or any substance that can possibly clog the hole of exit. Let it be remembered, when regulating the machine, that the seed will not be likely to fall so fast from a full hopper as they will when it is nearly empty. The seed should be sown from half an inch to large an inch under the surface. The lighter the soil, the deeper the seed may be sown. It is thought that deep sowing has the advantage of getting the plants so deeply rooted that they will bear having the earth slightly pulled away from them in the first weeding, without so much injury as sometimes results when they are planted shallow. While planting, as well as when using the hoe, our farmers will find the advantage of having a finely pulverized surface to work on, free of all clods, sticks and stones, as such will continually vary the straightness of the rows, interfere with the planting and covering of the seed, and, when the hoe is

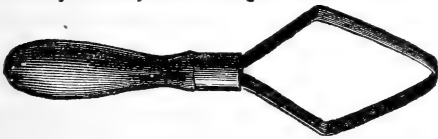
used, glance it out of its course in among the tender plants.

### HOEING AND WEEDING.

In from two to three weeks, if the weather is an average for the season, the young plants by a close examination may be seen pushing their green arches above the surface, bearing a close resemblance to a curve of grass. As soon as sufficiently up to enable a sharp eye to determine the course of the rows, without delaying a day or an hour, if the weather permits, the prudent cultivator will slide through his Scuffle Hoe, as at this season of the year the weather is very uncertain, and the land may become too wet to be worked soon after the young plants appear, and yet not too wet to hinder a rapid growth of weeds. Sowing a few radish with the onion seed is sometimes practised. As the radish seed vegetates in a few days the rows are thereby marked out and the wheel hoe can be used earlier. Care need be taken that the radish seed are not larger than the onion and so clog the hole. To obtain very choice cabbage plants, which grow fine and stocky, farmers drop a few seed into the hopper with the onion seed. On so rich a seed bed, prompt action is very necessary, or a miserably discouraging tangle will soon be the result of negligence. In their comparative freedom from weeds the cultivators in the West, on their new land, have a great advantage over their brethren in the East. By selecting pasture land and avoiding the use of barn manure, the work of weeding may be greatly reduced. I have raised a crop on such land, when the entire expense from after the crop was planted until it was gathered and got into the barn was but \$35.00 to the acre. It was so free of weeds that one man slid through, hand weeded and partly thinned an acre and a quarter inside of a day. In about a week after the hoe has passed through them, the young plants will need their

first weeding with the fingers. This is hand-and-knee work and, pursued as it has to be in this position at intervals throughout the heat of summer, it is to many the most wearying work of the farm. Boys being more nimble fingered than men, besides working for lower wages, there is a great saving in employing them, *provided* they can be relied on to pull up the roots of the weeds. When several are at work it will be wise to have a man with them.

To protect the knees from sharp stones, "pads" are used, which consist of squares of about eight inches, of several thicknesses of woolen usually covered with leather, strapped to the knees. In ordinary seasons onions require three or four hand-and-knee weedings, and from four to six slidings with the hoe. A man's judgment must be his guide. As onions shade the ground but slightly, weeds grow rapidly in onion beds; and if they are once allowed to get the start, the labor of cultivation is immensely increased. Some cultivators practice scratching the soil away from the onions when weeding, with an old knife curved at a right angle near the point, or by a piece of iron hoop curved, the end being nailed to a small piece of wood conveniently held in the hand. Others practice throwing the soil slightly around the young onions with a scuffle hoe made with reference to this use, with a view of smothering the small weeds. Noyes' hand weeder will be found a very handy little implement for removing weeds, particularly



when the surface of the ground is somewhat hard. When the onions have begun to

"bottom down," *i. e.* form their bulbs, it is the general practice to remove as far as practicable any surplus earth that has accumulated around them. In weeding, two or three rows are

taken together, the weeds being dropped between the rows. Just before the crop ripens down, larger weeds will show themselves here and there over the beds ; these are generally gathered in baskets and dropped at the end of the rows. If the seed of such weeds get ripe before they are pulled, the weeds should be carefully deposited in a pile in some by-place, where they can be burned when dry. Growers who practice throwing such weeds to their hogs because they are large and succulent, make an annual seeding of their beds with weeds. Particularly is this true of Purslane, one of the greatest plagues in the heat of the season. The habit of this plant is to ripen the seed, well down on the stock, while the main body of the plant is in its full vigor ; hence it usually happens that much seed drops into the land some time before it is pulled, while the farmer never mistrusts it has ripened. I have seen Purslane completely eradicated from garden plots where it formerly was a pest, by a little care in this matter of letting it go to seed. The same remarks apply to the weed known as chickweed. When blank spots occur from poor seed, poor planting, or the ravages of the onion maggot, bush beans, cabbages or tomatoes may be planted.

When the plants are too thick, over one to two inches, they should be thinned ; but the beginner had better pull with a sparing hand, for, if the ground has been manured very liberally, the crop will do well when the plants are very thickly together, and they will oftentimes grow as large when very thick as they will with three times the room. Onion-growers like to see their onions piled two or three deep as they grow, the upper layer being entirely out of the ground with the exception of the roots. When the tops begin to fall over, the onion is rapidly maturing, and the bulbs will now grow very fast. Farmers will tell you that "the top is going down into

the bottom." The Flat onions begin to bottom late in the season, while the Danvers makes a very encouraging show of bulb quite early. Should the land have been but poorly manured in seasons of drought, the crop will be apt to be ripened prematurely, forming a small sized onion, while (divided it may be by merely a wall) those that have been more liberally manured stand the drought, and keep green sufficiently long to receive advantage from the later rains ; an investment of twenty dollars in manure thus making a difference sometimes of a hundred dollars in the crop. If the crop is quite backward, late in the season the necks of the onions are sometimes bent over to hasten the formation of the bulb. This is done by hand, or by rolling a barrel over two rows at a time.

#### STORING THE CROP.

When the necks have fallen over, and the great proportion of them are dry, the crop should be pulled by hand and be laid in winrows, about three rows being put in one. At this time all weeds remaining should be pulled and piled, preparatory to the final clearing of the bed. The pulling of the crop should not be delayed after the tops are well dry ; for if rain should now fall, the onions will be apt to re-root to their injury. Should the backwardness of the season make it necessary to pull the crop in rather a green state, it will be well to allow it to remain untouched, after pulling, for about a week, before turning or stirring, which will tend to hasten the decay of the greener tops ; otherwise they should be carefully stirred every pleasant day with a wooden-toothed rake. This should be very carefully done, as the onions are very easily injured, especially at this stage, and when injured are almost as likely to rot as a bruised apple. See that they are not injured by

the raking or treading of a careless hand. When the crop is thoroughly dried, the onions feeling hard to the handling, it will be ready for topping for market. They are carefully collected in baskets, rejecting all stones, scallions and rotten onions, and taken in wagon loads to the barn, when the tops are cut off clean to the onion with a sharp knife, or if the necks are small and quite dry they may be pulled off by the thumb and finger. This is usually done by boys or females from two to four cents a bushel. While collecting, look sharply on the bottom of the onions to detect rotten ones. Some growers prefer to leave such of the crop as they design to keep for a late market untopped. If it is intended to market the crop immediately, the onions may be piled to a depth of three or four feet; otherwise they should not be over two feet in depth. Leave the barn doors and windows all open every pleasant day. As the crop is topped, those of the size of a hazel-nut and smaller are classed as pickle onions, these being marketed principally for that purpose, and usually bringing about half the price of the full grown ones.

#### TRACING, OR ROPING ONIONS.

When the crop has ripened down but poorly, the greener onions are at times traced. This is done by cutting off the neck within about two inches of the bulb, and binding it to a handful of straw; beginning at the butt end of the straw, lay the neck against the straw, give two or three firm turns with the twine (net or wrapping twine), add another onion, and thus proceed till the straw is covered, the larger onions being tied to the bottom and gradually decreasing in size to the top. Onions so slowly ripened that they would soon spoil if stored in a mass, will keep well when traced, and oftentimes bring a greater profit than the best of the crop. Rareripes,



and such of the earlier onions as are to be sent long distances, or be kept awhile before marketing, are sometimes traced. Traced onions keep in good condition a long while in a dry, cool place. Within a few years tracing has almost ceased in this vicinity.

### MARKETING THE CROP.

The Sett onions, Potato onions, Top onions and Rare-ripes, in some sections, are for the most part sent to market in a green state in bunches. The Potato onions are brought from the South, dry, in large quantities to supply the Northern markets, soon after the arrival of the Bermuda onions, just before the ripening of the Northern crop. After the Potato onions follows the earliest variety of the Red, and immediately after, the Danvers, and finally, the large Red completes the season. The sales in the Northern markets early in the season are made mostly for the supply of the local immediate demand, the great bulk of the crop not being sent in before the call for shipping purposes has commenced. For this reason, farmers find it to be for their interest to do but little more than feel the market until about the middle of October, as large purchases made previous to this period are mostly as an investment by speculators, with the exception of such lots as go to supply the markets of large towns and cities of the extreme North beyond the limits of the onion-growing region.

The price of onions varies greatly; they have sold as low as seventy-five cents a barrel, while the early crop of 1864 sold as high as sixteen dollars a barrel, by the five hundred barrels. From September to March, in the same season, the fluctuation is sometimes between two dollars and six dollars. Crops have at times been sold to be delivered in the course

of two months, and in that time have more than doubled in price. The general truth is, that those brought latest to market, being kept till near spring, bring the best prices. The great facilities afforded for onion raising by the fertile soil and favoring climate of the West, will doubtless in a few years tell powerfully on the Eastern market.

### PRESERVING THE CROP.

If it is the design to keep the crop for a winter market, it should be stored in a *cool, dry* place, out of danger from severe frosts, in bulk, but not over two feet in depth. Onions will bear a temperature of 28 degrees without injury, or any degree of cold if kept frozen till the final thawing when in bulk. It is a good plan to let them rest in a lattice work of slats on the sides and bottom of the building, that the air may circulate through them. If kept in barrels, these should not be headed, and should have two or three openings made with a hatchet or large auger in the sides near the bottom. If it is designed to keep the onions till spring, the cheapest and best way is to freeze them. To do this, select the north-west portion of some out building under which the air does not circulate, spread the onions about one and a half feet in depth, leaving a vacant space of about two feet from the side of the building, let them get thoroughly frozen, then cover them closely with an old sail, or any cloth, to keep the hay from mixing with them, and spread the hay two feet or more in depth above the covering; also pack fine hay closely between the heap and the sides of the building. Here let them remain untouched until the frost is entirely out, when they should be spread at once, well aired, and turned carefully and often until thoroughly dried.

If the onions in the fall are not well ripened, or if a larger

proportion than usual are rotten, which is apt to be the case after a very wet season or when the onion maggot has given much trouble, to store largely for winter sales is attended with great risk. I have known one enterprising cultivator to sink several thousand dollars in a single season by storing heavily under such circumstances.

### SMUT, RUST AND MAGGOT.

The onion crop is sometimes severely injured by a disease resembling mildew. The tops of the leaves die, and the whole plant is more or less covered by this white blast. From the effects of it the onions almost cease their growth, and the crop finally obtained is small in size. This disease in some sections is known by the name of "rust." It is more frequent in extraordinary wet seasons, and is more common on old beds than new. The best remedy yet known for old beds is to carefully remove from the bed and destroy at the close of the season all diseased bulbs, as they will be likely to spread the disease by giving it a lodgment in the soil, then run the plow a little deeper, and thus mix in a little new soil.

The onion maggot is hatched from the eggs of a fly, which are deposited in the plant (not the seed) very near the surface of the ground. Its presence may be detected in the crop when very young by the sudden turning yellow and falling-over of the plant, when, if the attempt is made to pull, it will usually break off near the surface, and on squeezing several small maggots will present themselves. Some writers state that the fly deposits its eggs only at an early period in the growth of the plant. It is true that some seasons the injury is most marked previous to the bottoming of the onion, but I have seen beds injured at every stage of their growth,

and in one season about half of the crop was destroyed by the maggot at the close of the season after the onions had been pulled. Various remedies have been proposed, but of these it may be said that they are not practical on a large scale. The idea on which most of these is based is that of producing a scent so disagreeable as to drive away the fly ; but old experimenters recall the capacity of the Canker-worm moth and the Squash beetle to ignore the most repulsive obstructions of this kind when stimulated by their instinct to deposit their eggs. Pine sawdust, either clear, soaked in the urine of cattle, or in the ammoniacal liquor from gasworks, scattered over the bed just before the appearance of the plants, at the rate of a bushel to ten square rods, guano sprinkled along the rows and on the plants, twice during the season, unleached ashes used in the same manner,—these have given satisfactory results to some growers. Scalding water poured from a common watering-pot through a hole the size of a pipe stem, along the drills near the roots of the plants, and repeated three or four times during a season, is said to be efficacious. It is obvious that the practical value of such a remedy must be confined to a very small area of land.

In New England the maggot has been slowly making his way North, adding greatly to the uncertainty of the crop, until his ravages have extended to Southern Massachusetts. Very light soils appear to be most affected by his ravages. In some seasons the injury done is insignificant, and on the whole the area planted in Massachusetts has not been materially reduced.

He will one year confine his ravages mostly to one portion of a township, and the next season reverse matters ; while some tracts are almost never injured, on others he appears to settle down as a permanent resident.

## RAISING ONION SEED.

What does all this investment of money, time, labor and watchfulness, amount to if the seed is worthless, has no vitality, is not true to name, or was grown from worthless trash? Onion seed should be raised from the very best onions of the very best crop grown in the vicinity. The best type should be first selected, which should be a medium sized onion, very hard and compact in structure, with a close, thin, fine skin, and a very small neck. Those selected for seed should be the earliest ripened of the crop, provided such are fully ripened and not blighted. To select the earliest onions, the seed grower should visit the field before the crop is pulled.

Onion seed is sometimes (I fear too often) grown from the entire crop, be it good, bad or indifferent. A great step of improvement on this is to purchase outright as good a crop as can be found; but the only way to secure and keep the best and most reliable seed is that first given. Poor onion seed is always very dear indeed, as a present, while first-class seed at the highest price yet paid is worth a long and careful seeking.

Seed onions should be kept in a cool, dry place, spread to about a foot in depth; if kept in barrel, (old lime casks are best) these should be left unheaded, and two or three pieces should be chopped off near the bottom to admit a circulation of air. As early in the spring as the ground can be worked, they should be set out in trenches, (the onion when covered in trenches will stand a heavy frost without injury,) which should be from three to four feet apart and about four inches below the surface, the land having first been heavily manured. Some good seed growers apply their manure directly in the trench, while others spread it broadcast and plow in. I pre-

fer to plow in a liberal quantity, and then use ashes, superphosphate of lime or guano, in the rows, applying it just before covering onions. If the onions are much sprouted, the sprout may be cut off quite home to the onion, which will insure a straighter and healthier growth. Care should be taken to plant right end up, for, odd as it sounds, in the spring it sometimes requires a little care to determine which is the right end. As soon as the onion is well rooted, the earth should be drawn up to it; and this should be done three times during the season, until the earth is heaped around them eight or ten inches above the surface of the ground. The first hoeing should be given them very soon after the sprout starts, to *fully cover the onion*, as when exposed it is very apt to decay. With this support, on land that is not too moist, I find that no further precaution is necessary to keep the seed tops from the ground, though it is the practice of many growers to support with light strips of wood, or a line drawn along about two feet from the ground. After the last hoeing, (and very clean culture should be given then), they should be gone among as little as possible.

The seed tops may be safely cut (leaving about six inches of the stem on) when the seed vessels begin to crack; or what is a better guide yet (for after the seed vessels begin to crack much seed is apt to be lost, especially by heavy storms,) after the turning yellow, near the ground, of the seed stalk; when this occurs, the top may be removed immediately, even though it should appear quite green above.

Seed tops will be often found in which the seed in the shortest-stemmed receptacles is ripened, and the receptacles themselves are cracked, while a fresh growth of seed vessels in a green state almost conceal them; in such cases I would advise the cutting of the top. The tops when cut should be

spread to a depth of six inches or less, in a warm place where heat and air abound, and be turned two or three times daily, until thoroughly dried, when the seed is ready to be threshed out ; or it may be stored in barrels in a dry loft, and threshed as wanted. If the seed is plump and has been well ripened, the frequent turning of the stalks will have shaken out by far the larger proportion of it,—in some seasons more than five-sixths.

As the seed stalks make but little shade, the ground between the rows can be cultivated to spinach, lettuce, radishes, turnips, or some early vegetables, then this will make the hilling of the seed more costly, and when these are harvested, be planted to cucumbers for pickles. The planting between the rows should be confined to the middle, and in trenches an inch or so below the surface, unless it be made after the onions have received their final hoeing ; otherwise the drawing of the earth around the seed stalks will seriously interfere with these crops.

Strange as it may seem to those who have not tried it, such rampant growers such as squashes can be raised among seed onions and generally with no material injury to the seed. I have known five tons of Hubbard Squashes grown on about half an acre of ground planted to seed onions. The squash should be planted towards the close of May, after the onions have received their final hilling, two or three seeds being planted close to every other row, and about nine feet apart in the row ; allow but *one plant to grow in a hill*. The vines, thus having plenty of room between the rows to spread about, do not incline much to climbing on the seed stock. Care should be exercised to break off at once the tendrils of such as attempt to climb. The one plant to a hill system will be

found to yield as liberal a crop and finer squashes than the old system of three or four to the hill.

The yield of onion seed to the barrel of seed onions varies greatly; indeed, no investments near the seaboard prove more speculative. The maggot sometimes proves very destructive, so much so that the crop will not average half a pound to the barrel, while under very favoring circumstances crops have been raised which average eighteen pounds to the barrel.

When the seed is fully dry, (and seed that has been sunk should have a long exposure to the air and frequent stirrings; I have known large lots spoilt from want of care in this), it should be so stored as to be safe from all injury from cats and other animals, who are apt to resort to it, to the utter destruction of its vitality.

#### RAISING CARROTS WITH ONIONS.

The plan of raising carrots with onions is considered a great improvement by many who have adopted it, as the yield of carrots is thought to be a clear gain, diminishing but little or none the yield of onions. Carrots are planted in two ways; one by sowing them in drills between every other row of onions, and the other, which is considered an improvement, called the Long Island plan, by planting the onions in hills from seven to eight inches from center to center, dropping a number of seed in each hill, and from the first to the twelfth of June planting the carrot seed, usually by hand, between these hills in two rows, then skipping one, and thus on through the piece. The onions as they are pulled are thrown into every third row, the carrots being left to mature. By this method from two hundred to six hundred bushels of carrots are raised per acre in addition to the usual crop of



onions. More manure is required for the two crops than for the onions alone.

The Machine used for sowing in drills has two boxes attached to the axle at equidistance from the wheels; there are three or four holes in the axle that communicate with the seed in the boxes, and as these holes pass under the boxes they are filled with seed, and as they turn the seed are dropped into the earth. Screws are sunk into the holes, which can be sunk more or less at pleasure, and the quantity of seed which the holes will contain is thus graded.

The machine should first be tested and so regulated that on a barn floor it will drop from eleven to twelve seed from each hole. When so regulated, on using in the field it will drop but from seven to twelve, owing to the more uneven motion.

This, like all sowing machines, and the same may be said of the scuffle hoe and wheel hoe, is pushed along before the operator.

My farmer-friends, I have now given you the result of my own experience in the raising of onions, Potato onions, Top onions, Shallots, and onion Setts, combined with the experience in onion growing of a neighborhood where a hundred thousand bushels are raised annually, with the results of personal observation in other localities, and with facts that I have collected by corresponding with different sections of the United States.

## ANALYSIS OF THE ONIONS.

A recent analysis, under the direction of Prof. Goessmar of the Massachusetts Agricultural College, gives the following as the principal constituents of the onion :

Air dry onions without leaves were found to consist of :

Water (at 100° to 110° C.) . . . 89.20 per cent.

Dry vegetable matter . . . 10.80 “

and contained the following amounts of—

Nitrogen . . . . . 0.212 per cent.

Sulphur . . . . . 0.048 “

Ash . . . . . 0.436 “

The percentages of the principal constituents of the ash were :

Potassium oxide . . . . . 38.51 per cent.

Sodium oxide . . . . . 1.90 “

Calcium oxide . . . . . 8.20 “

Magnesium oxide . . . . . 3.65 “

Sesquioxide of iron . . . . . 0.58 “

Silicic acid . . . . . 3.33 “

Phosphoric acid . . . . . 15.80 “

Sulphuric acid not determined.

In the above table Potassium oxide, Sodium oxide, Calcium oxide and Magnesium oxide, mean practically pure Potash, Soda, Lime and Magnesia.

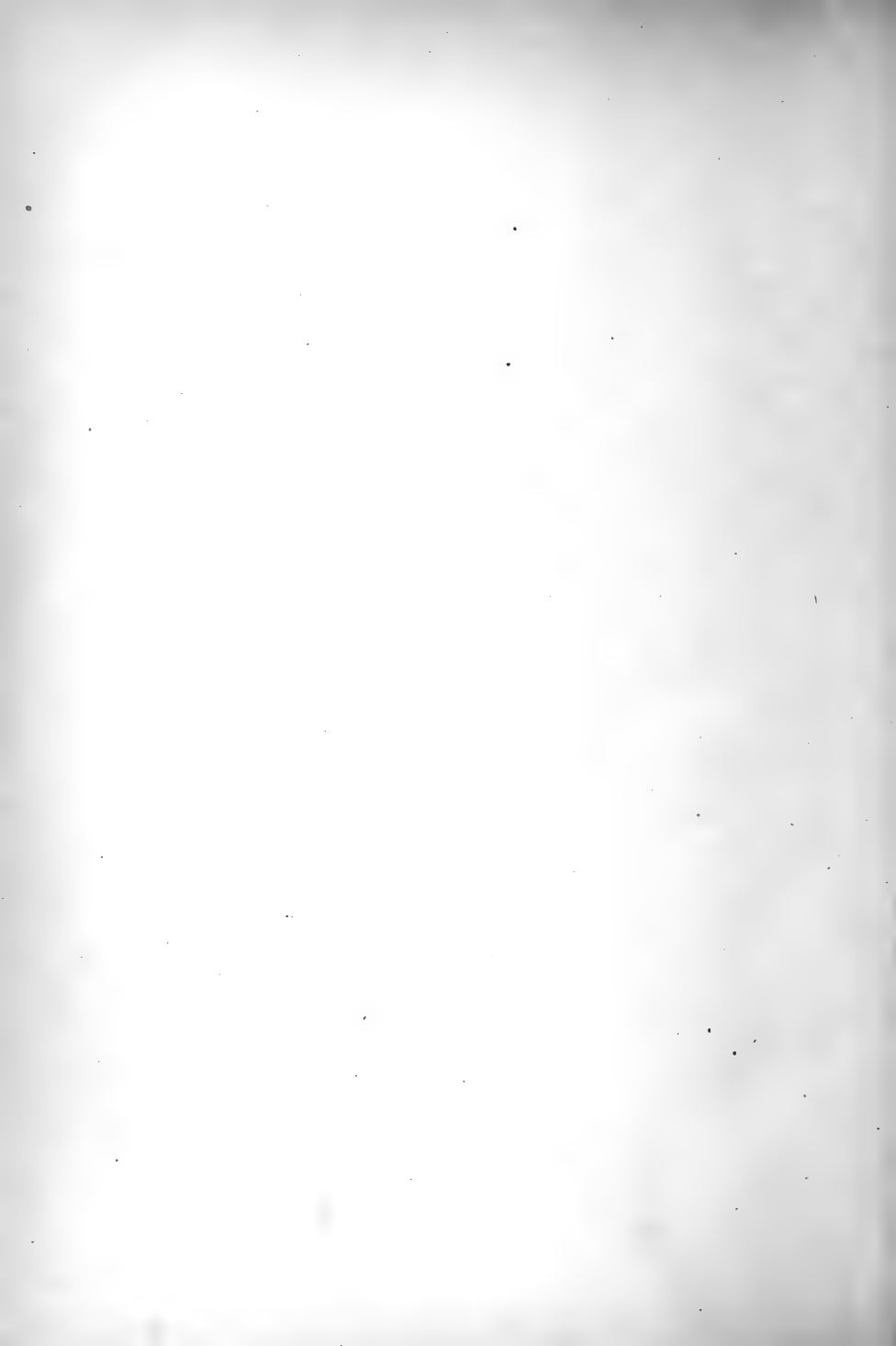
I infer from the table that of the three grand essentials in manure, Nitrogen, Potash and Phosphoric acid, the onion requires about equal quantities of the two former and half as much of the latter.

I trust this contribution will prove acceptable.

JAMES J. H. GREGORY.

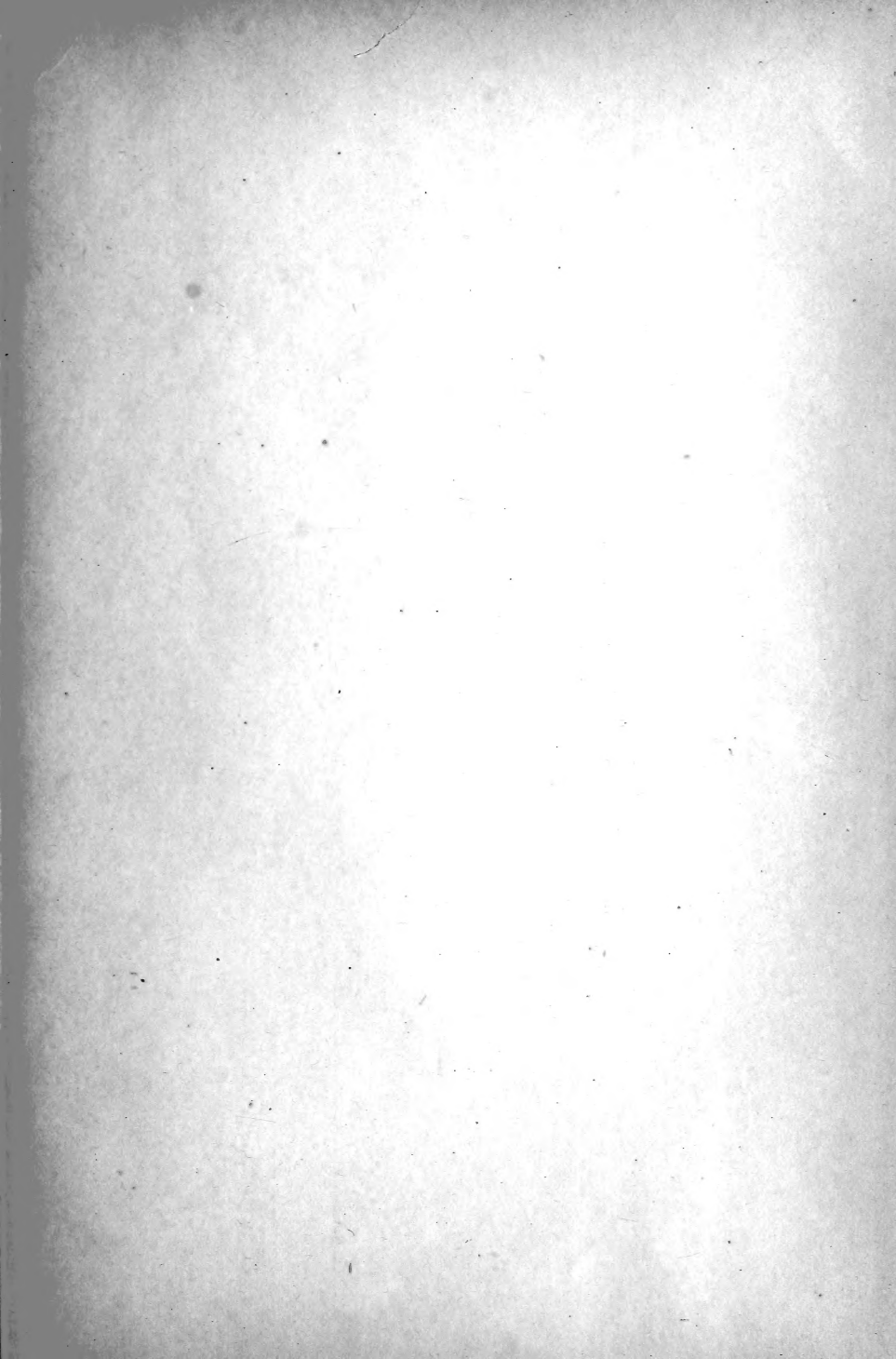
MARBLEHEAD, MASS.

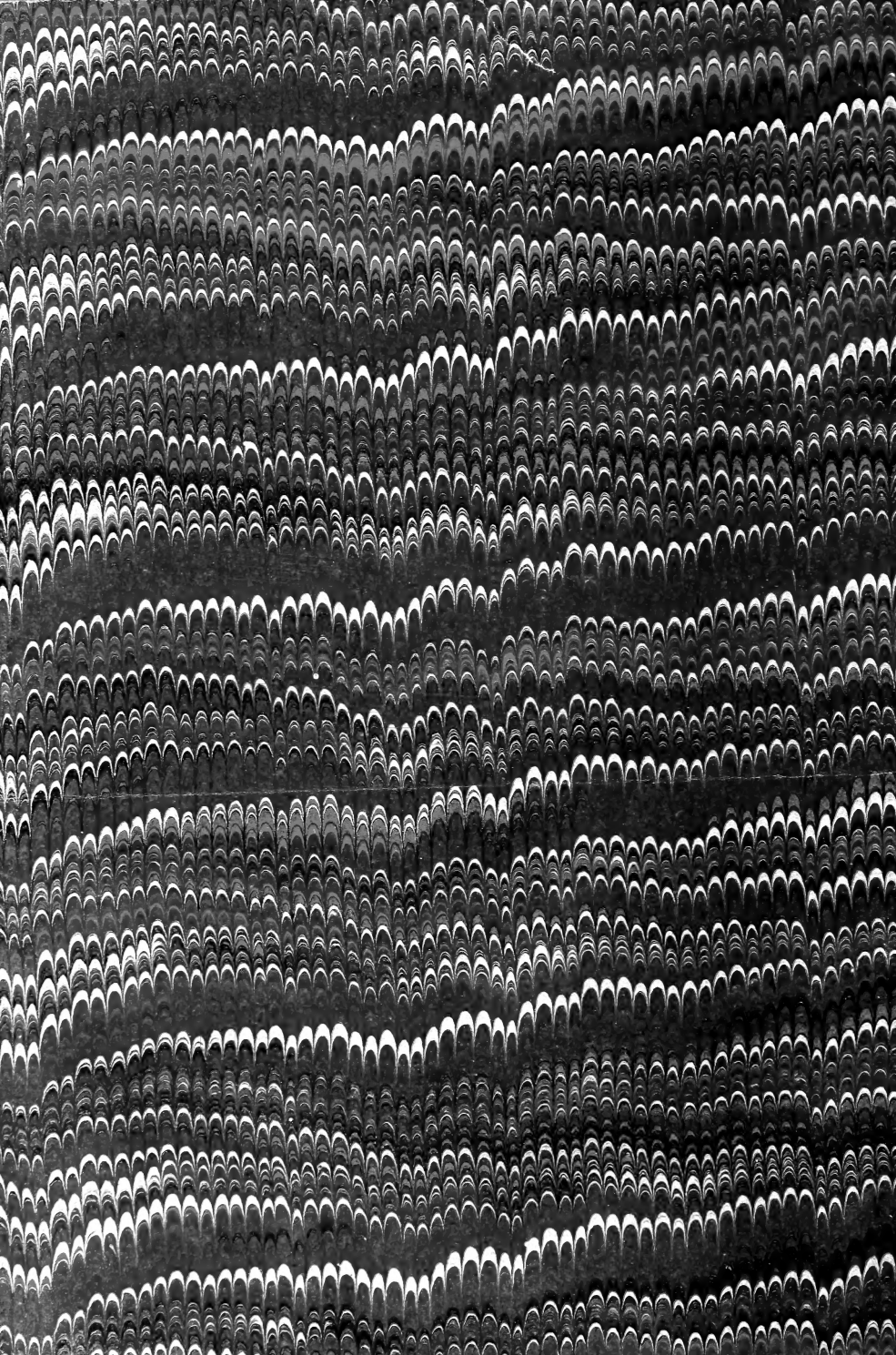




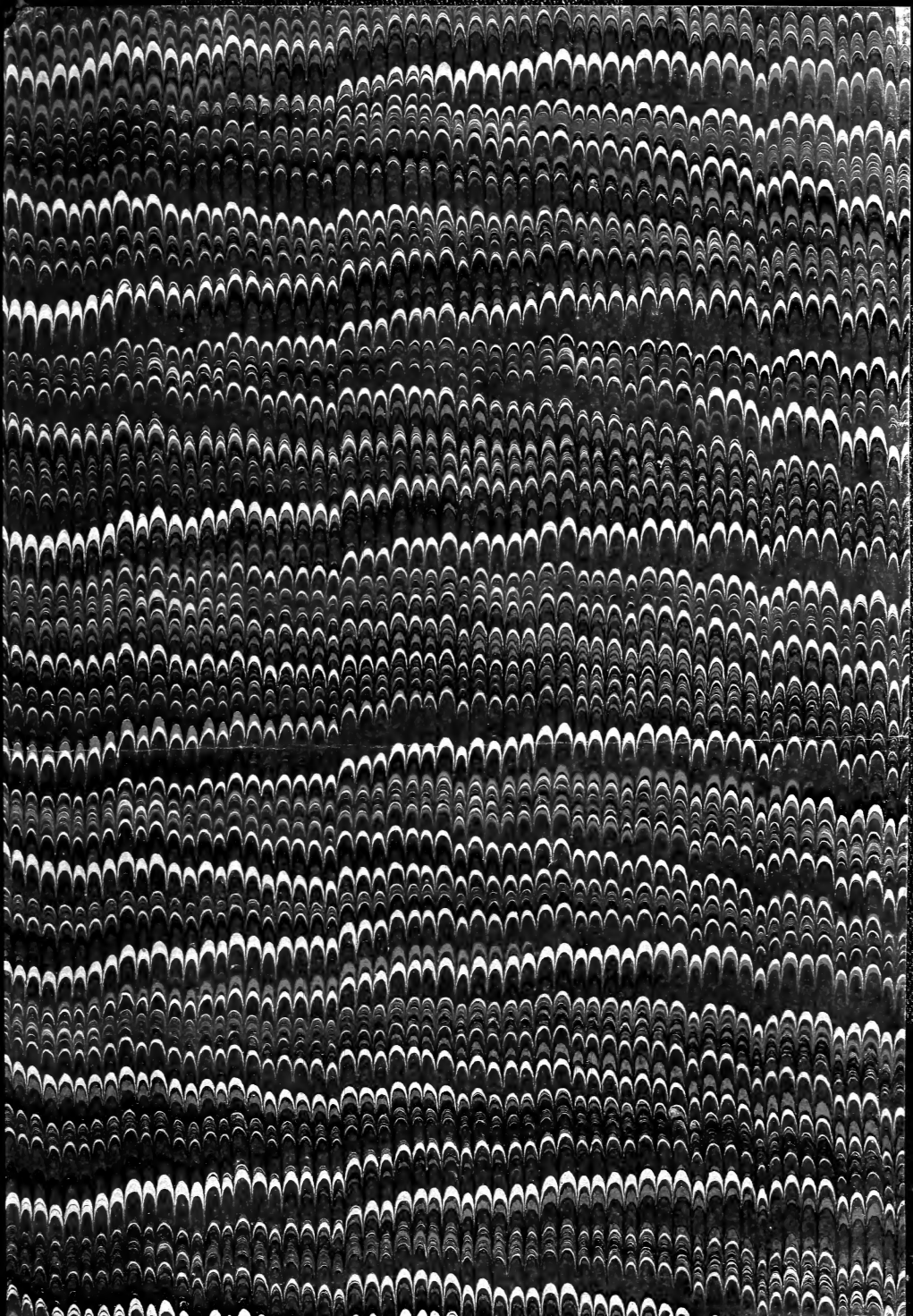












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