

attention to the importance of improving it. No part of the soldier's clothing or equipment is more important. A soldier can and frequently does fight in his shirt sleeves and bareheaded, nor is his military efficiency impaired by a canvas patch on his trousers, but if his shoes give out or his feet get sore he will not be on hand to fight at all. By the failure of the shoes, the man, his arms, and his ammunition are lost for the fight.

During the time I have taken in observing this matter, I have marched about two thousand miles, all told, and have closely observed and questioned the men of my company about their shoes. I have seen about five per cent. of a regiment of three hundred men disabled for hard marching by sore feet, in a march of ninety miles over good roads, going at the rate of about twelve miles per day; and, as a contrast, one company of the eight present in that regiment went through without a sore foot in the entire company, simply because its captain had looked carefully to his men's shoes, and had each man prepared with well broken, well greased shoes of proper size. (It was not required that the men of this company should wear the issued shoes, but no shoe might be worn unless the captain approved it.)

In war five per cent. would be a heavy interest to pay for poor economy.

This whole matter, while worthy of the close attention of all military men, is, comparatively, a neglected field. The subject is a homely one, and has none of the attractive glitter of more pretentious themes, but it is worthy of much thought and deserves a better presentation from some more skilled and facile pen than mine. The great Napoleon hanged a contractor for stuffing soles, and he discovered the fraud by cutting up a shoe with his own imperial hands. Wellington is said to have enumerated the three most essential articles of a soldier's equipment as: 1st, a pair of good shoes; 2d, another pair of good shoes; 3d, a pair of half soles.

The feet of the soldiers of our army are among its most effective weapons, and they deserve and should receive all due care, and the army in which this care is neglected will bitterly regret the omission at a time when it has much more than vain regrets to occupy its attention.

THE LEGAL RESPONSIBILITY OF THE AGED.

By J. J. CALDWELL, M.D.,* Baltimore, Md.

HISTORY is replete with the failings of old age. The exceptions are rare and stand out like meteors.

There is a senile dementia, and a form of dementia associated with general paralysis. Dementia also has its degrees and its stages of forgetfulness, irrationality, incomprehension, and inappetency. A patient suffering from dementia, as he passes from bad to worse, first exhibits a want of memory, then loss of reasoning power, then inability to comprehend, and lastly, an abolition of the common instincts and of volition.—P. 50. Field's Medico-Legal Guide.

In the progress of this mental disorder the mind usually dwells only on the past, and the thoughts succeed one another without any obvious bond of association.

Delusions, if they do exist, are only temporary and leave no permanent impression, and for anything recent the mind is exceedingly weak. If it occurs as acute dementia in young people, it is generally incurable. In old men, in whom it most frequently occurs, it is called senile dementia, and indicates the breaking down of the mental powers in advance of bodily decay. The persons may become oblivious of names and dates.

Professor George M. Beard, now deceased, the great neurologist and electrician of New York City, and author of an elaborate work on these subjects, has divided a paper read before the Medico-Legal Society of New York into three heads, viz.:

1st. What is the average effect of old age on the mental faculties? In other words, what is the law of the relation of age to work?

2d. To what extent is the average responsibility of men impaired by the change which the mental faculties undergo in old age?

3d. How shall the effects of age on the mental faculties be best brought to the attention of our courts of justice?

These questions have been a life-long study with this scientist, who set about making his investigations without fear or prejudice, and in the full hope that the result of his researches would be made available in deciding the condition of the minds of men past the full maturity of life.

Dr. Beard has deduced these general results from his prolonged investigations, viz.:

The golden decade is between.....	30 and 40
The silver " " " " " " " " " "	40 " 50
The iron " " " " " " " " " "	50 " 60
The tin " " " " " " " " " "	60 " 70
The wooden " " " " " " " " " "	70 " 80

He found that 70 per cent. of the work of the world is done before the age of 45. Nearly all the great systems of theology, metaphysics, and philosophy are the result of work done between 20 and 50 years of age. And this law holds good in animals and plants as well. Horses live about 25 years, but they are at their best from 8 to 14. Dogs live 9 to 10 years, and are best for hunting purposes from 2 to 6 years. Children born of parents healthy in middle life (from 25 to 40 years) are stronger and smarter than those born of parents either younger or older than these extremes; and the same fact applies to the breeding of other animals, as in horses, dogs, and cattle. The hen has her best laying capacity at her third year. She will lay in an average lifetime, say 9 years, from 500 to 700 eggs. In her first year only 18 eggs; in her second year, about 110; in her third, 130, the golden period; her ninth year, only 10 eggs, if any. In old men the faculties morally deteriorate, as do the physical.

This does not necessarily make an old man a bad citizen in the true sense of the term, as of a neighbor or a harm-producing person. But unless sustained by a higher power, he is apt to give a looser rein to his feelings and expressions, to display irritability, less

consideration for the feelings of others, and if he has had any variety of brain trouble, this is apt to reflect on his every act.

The diseases to which the brain is liable through a long course of years are many, such as blows, destroying the memory of names, dates, locations, and events; a bereavement has destroyed the memory of names alone. Millionaires once known for their liberality have grown stingy in old age. Hemorrhage in the brain and the various disorders within the cranial cavity have suddenly or more gradually made the clever foolish, the patient petulant, the hopeful despondent; have caused men and women too to change almost instantaneously their religious and their political doctrines. When the intellect is impaired by disease of any kind, or by the decay of age, men cannot distinguish the true paths of old, even when they desire to do so.

The changes in the brain from old age much resemble a diseased condition, either like the result of hemorrhage from the giving away of the cerebral arteries, from thrombosis, from hardening of the arterial coats, from meningitis, congestion, from anæmia of the brain substance, from nerve tissue decay, and from softening; and death in aged persons is more frequently a process than a sudden event, the process being one of very gradual, incapacitating decline of the mental faculties. An old man may begin to die ten or fifteen years before the absolute death of his body really occurs; and, like a tree, he may die beginning at the top and going down to the trunk. The decline in the moral faculties in old age may be shown in studying the lives of such men as Demosthenes, Cicero, Sylla, Charles V., Louis XIV., Frederick of Prussia, Napoleon, Voltaire, Dr. Samuel Johnson, Oliver Cromwell, Ruskin, Dean Swift, Milton, Lord Bacon, Webster, and Horace Greeley. Old men decline in various faculties, some becoming peevish, others avaricious; some mean, filthy, and tyrannical; others quarrelsome, sensual, unjust, revengeful, and ungrateful for past favors and kindness.

The best average barometer of mental force is the memory, and decline or any deterioration in the power of the memory is the advance guard in old age, which sooner or later invalidates the forces of the brain. Most men show their mental powers in middle life, while their advanced years are the periods when they apply and reap the harvest of the work executed or planned in their palmy days. Thus Lord Bacon, Swift, Dickens, Ruskin, Thackeray, Carlyle, Emerson, Wendell Phillips, Graefe, Pinel, Luther, Nelson, Harvey, Webster, Jenner, Jefferson, and Washington did their best work before old age got the better of them. Sterne said that "At sixty years of age the tenement gets fast out of repair," and Emerson says, in his "Plea for Old Age," "We cannot count our years until there is nothing else; to count," and added, "We postpone our literary work until we find that our literary talent was a youthful effervescence which we have now lost." Dr. Oliver Wendell Holmes says: "New ideas build their nests in young brains, and the whisperings of new truths are not caught by those who begin to feel the need of an ear trumpet."

General Halleck, in his work on "Military Science and Art," shows that mainly all the successful campaigns of history have been fought by comparatively young men, men in the prime of life, and that most of the early successes of Napoleon were gained over old and worn-out generals.

In the late civil war of the States, the North began with old generals, and failure was the result, and the average of the later generals who finished that contest was between thirty-five and thirty-nine years. We find the average age of the fifty-six signers of the Declaration of Independence was between forty and forty-five years of age.

Mr. Guernsey, of the New York bar, said: "From twenty-five to forty may be considered the seed time of life; that is, the time when knowledge is accumulated, and stored up for future use."

There are three causes of moral decline in advanced life:

1st. Is the overtaking and overexercise through adult life of the physical and the intellectual faculties, to say nothing of early sexual abuses.

2d. Diseases of the brain, or of other organs, which react on the brain.

3d. Intellectual decline, or the gradual process by which all living beings decay and die.

The question of legal responsibility comes up in old age:

1st. As to cases of crime by aged persons.

2d. Cases of wills, which are disputed on the ground of senile incapacity.

3d. When it is desired to fix the limit, as to term of office, etc.

4th. As to cases of priority of invention, etc.

Corruption in business and in political life and breaches of trust are common among the old, as every day's papers inform us. Offenses which depend upon sexual passion are not infrequent among the aged, for it is well known that in the decline of life many return to the vices of their youth. Even clergymen, old men, have been charged with such irregularities.

Cases of wills contested on the ground of senile incapacity are frequent enough, often giving rise to much trouble and estrangement among members of the same family; and an evident presumption would often lead to an incapacity to dispose of by will wisely the accumulated possessions of a lifetime.

A man in the decline of old age may be irresponsible more or less in one or more directions, while responsible in others. Few men break down all at once merely from decay of powers, but the faculties leave one by one, as the one first becomes defective, or softened if of the brain, while the others remain for a while longer fairly healthy, as an army in retreat moves off, some holding their position while other regiments fall back. Thus the wear and tear of aged persons may be rapid, save where money, the touchstone of life, is concerned, for the old man cares rather for the money *in ipso* than for the good that money can bring. Grudge or personal spite, unnatural enmity against a person, relative or not, often occurs in advanced age, amounting even to more than a disagreeable eccentricity, to almost a disease, and may influence judgment even against those who have been kind and affectionate toward the individual. It is difficult and generally fruitless to endeavor to remove this prejudice.

Then the aged are liable to be deceived by designing persons and have influences exerted over them which in their better day they would have seen through or have not tolerated. The case of Horace Greeley may be cited as an instance of the irresponsible condition of an old man, he becoming inordinately fond of money as soon as disease invaded his brain, and yet he became insane the last week of his life and his will was disallowed.

When an old man, previously benevolent and wealthy, becomes in dread of the poor house and begrudges the fuel for his family, the meat on his table, and the clothing for himself and his family, there is reason to suspect very serious cerebral disturbance, which might suffice to incapacitate him from making his will.

An instance may be cited of an aged clergyman, who all his life had been mean and penurious. In his golden decade, in his thirty-fifth year, he had been a minister of the gospel, a noted preacher. Between seventy and eighty he became worse and worse; becoming a genuine nuisance. He lost his memory and his manners; lost his wife; he then married again under the most absurd circumstances; was then divorced from the wife, and again married. He then went into gross excesses; lost his physical health, which up to that time had been excellent, and finally lost all his money through the treachery of this last wife, who in the end deserted him in his poverty and in his imbecile condition. This man had during all these years made will after will. His friends now took him in charge and treated him as a confirmed imbecile.

Dr. Brigham, of Massachusetts, says that in this country insanity and other forms of brain trouble are three times as prevalent as in England, and Dr. Winslow, a celebrated expert in insanity, says: "In the incipient stages of cerebral softening, as well as in organic disintegration of the delicate nerve vesicles observed in what is termed progressive, general and cerebral paralysis, ending either in apoplexy or in progressive paresis or in childishness. In such cases the patient often exhibits a debility of the mind, of body, and of memory more especially, long before the disease of the brain is suspected in regard to the most trifling affairs of his life. He forgets his appointments, or goes to keep them before the appointed time. He is forgetful of the names of his particular friends with whom he has lived in the closest intimacy; he becomes irritable, mislays his books, loses his papers; he sits down to write on some matter of business, and his attention being diverted for the moment, he forgets and leaves his letter unfinished."

The memory may be considered one of the most delicate tests of the presence of injury or of the progress of natural mental decay in the brain. The case is cited of an old man, who could never recollect the names of the inmates of his establishment, recalling only the initial letter of each one. He accordingly kept about him a list of their names so as to indicate them.

Old age, wear and tear, will, like pressure from a bone on the delicate substance composing the brain, produce more or less complete death of the sentient being for the time. One of the early indications of softening of the brain is seen in the paralysis of the muscles of the face, *i. e.*, the drawing down of the eyelid, and the distortion at the angle of the mouth from paralysis of the corresponding muscles of the other side.

In many instances these irregularities and extravagances are but the premonitory symptoms of softening of the brain, that terrible malady, incurable, and which gradually destroys, one by one, the powers of mind and body, and reduces the poor sufferer to a living death. Sensations as of cold, numbness, pain, and of increased warmth at times may all be felt in a perverted state; in some everything touched feels cold; others can bear only the lightest wraps in bed on the coldest nights of winter.

Professor Simpson, of Edinburgh, knew persons with incipient signs of general paresis to complain of their fingers feeling like sausages, cold and fleshy; and it is well known that on the approach of a paroxysm some have had such a feeling about the tips of the fingers as to lead to the habit of biting their nails, and this habit is known to exist in many inmates of insane asylums. The manners in such people are very variable, being different only in that the feeling of numbness and inertia persist and are on the increase all the time with them; while in the adult healthy individual, if this condition comes on at all, it forms a brief attack following generally a recognized cause, and then leaves the party almost, or as well, as before the attack.

It is the opinion of many eminent physicians that there has been a large increase of brain diseases during the present century, and that this increase has occurred in an accelerated ratio in proportion as the strain in commercial and public life of the people has increased, making the struggle for position, for wealth, and even for existence so much more difficult than formerly, when man's ambition was to live simply and to follow the golden rule, thus requiring increasing struggle for the luxuries of life, which finally culminates in cerebral excitement under which the delicately organized brain is forced to yield. Eccentricity is but a name often covering painful afflictions, and any prolonged exaggerated conditions of eccentricity may be said to constitute disease (page 89, "Work on the Border Land of Insanity," by Andrew Wynter, Esq., M.D., of London). Many mental eccentricities are but the forerunners of serious mental failure. The inability to grasp a stick, the continued numbness of the fingers, the loss of memory in small matters, are often indications of serious cerebral disturbance. Dr. Graves, of Dublin, a distinguished physician and writer, cites a case, who could never remember proper names; and Dr. Samuel Johnson, the great English scholar and writer, the author of the beautifully selected passages in *Rasselas of the Happy Valley*, would attempt in vain to repeat the Lord's prayer in English in his later days, and yet he could repeat every word of it in Latin.

Dr. Samuel Rogers, the poet, in his later years, showed peculiarities of memory, very like those of persons known to be suffering from disease of the brain; he even forgetting that he had been a poet. This is an uncommon form of loss of memory, for once a poet, a man thinks himself a poet forever. Throughout history, from the ancient fathers to our own times, we find like failures for the period of old age. We need

* Neurologist and Expert in Medico-Legal Procedures, etc., etc.

only cite the famous John Randolph and that great jurist Samuel Tilden, of New York.

In the Bible we read of David and the follies of his old age; of Solomon and his foibles with the fair sex; of the valor to-day and the cowardice to-morrow of Elijah, in his flight from Mount Carmel; all in the extreme old age; of Moses, the law-giver, who organized the Mosaic code, finally disappearing and wandering in the mountains lost to memory and to history, so that with all his legal lore he had not the mother wit to keep his bearings, or to leave his final testamentary evidence for future generations.

It has been said in this trial that many cases might be cited in green old age, where great ability and wonderful acumen were maintained even to the day of death. Such cases when seen at all are like angels' visits, few and far between, and "they stand out like meteors in the midnight sky."

Now comes a review of the last great

"Scene of all
That attends this strange, eventful history,
Is second childhood, and mere oblivion—
Sans teeth, sans eyes, sans taste, sans everything."

And we may add to this doleful picture sans will, sans memory and sans care for those who loved him.

See the picture of this poor old man, shrunken; not in his locomotor power alone, but in mind, and failing in his powers of memory, without which the noblest work of the Creator becomes useless, helpless, motionless and reasonless on the tide of life; is at the mercy of the slightest breeze by friend or foe—whichever most caters to his present whims; or like the feather tossed by the stormy waves, it was something once, but wilted and weighted down by the moisture of the sea, it is but a creature of chance. This old man was lame, blind, halt, toothless and his "voice had fallen in tone from the mighty starboard watch ahoy!" to the childish, feeblest piping and whistling, like the tiny reed; or like the creaking door, in his strength, left to rust and droop until no longer with any to care for it, in the end it tilts and falls, carrying danger in its fall. On top of and above all these threescore years and ten, he suffered from the grippe, that prostrating, debilitating, life-destroying grippe, which takes its name from the French word "tongs" or "seizings." The French are very *au fait* in their use and application of the proper words. This disease is known to the Italians as "influenza;" to the people of the far South as the "dengue," or break-bone fever, and in England as the "epidemic bronchitis." It is fearful in youth, prostrating to adults and fatal in old age.

In connection with all this disability, lasting many months, this old man attempts to publish his will. Often then he says to his brother and to his elder sister: "Don't you worry; I have already provided for you." He thought he had made this provision, no doubt, but on the contrary he utterly forgot to mention them. Poor old man! His good intentions took the place of good actions, which he thought performed, until at last he had neither will nor memory, but existed like a plant—simply on the sap that was left and on the light of other days. This honorable jury must forgive him, for he knew not what he did, being irresponsible and living on the visions, the *ignis fatuus* of past recollections—merely a creature of habit and repetition.

Thus his constant effort in business was a mere matter of habit and but the shadow remaining of his former good intentions toward those who were justly entitled to his beneficence. He did not even recollect the amount of his income, nor did he provide for over one-third of it, and the little he did attempt to will he divided to those he had forsown. His memory was but a fume, a mist, like the froth on the beer glass—now present like a bubble, and then gone to rise no more.—*Med. and Surg. Reporter.*

THE OUVIRANDRA FENESTRALIS.

THIS magnificent aquatic plant is remarkable by the nature and aspect of its leaves, which recall a fine and elegant piece of lace. It inhabits the waters of Madagascar, where it was discovered for the first time by Dupetit-Thouars toward the end of the last century. It was the Rev. Mr. Williams Ellis who introduced it into Europe. The following is an extract from a letter that he wrote to Sir William Hooker on the subject:

The rarest and most interesting object that was worth my last visit to Madagascar is the beautiful aquatic plant called *Ouvirandra fenestralis*.

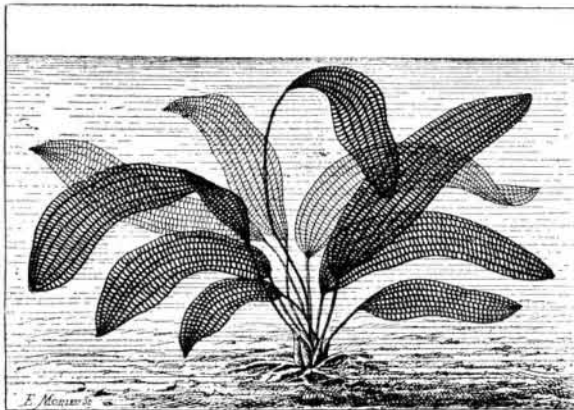
Dr. Lindley, among various plants to which he had called my attention before my departure from England, had particularly recommended this one to me in showing me a figure of it in Dupetit-Thouars' work. In the Isle of France, Mr. Boyer, a distinguished naturalist who once lived in Madagascar, pointed out to me liberally the localities in which I might stand a chance of meeting with the plant, and permitted me to make a copy of the plant already mentioned. This copy, made upon a larger scale than the original, was shown to the natives, and I finally succeeded in finding a man who was able to detect the natal place of the so much coveted plant. With the permission of his master, from whom I had received many acts of politeness, the man started out to look for the *Ouvirandra*. He returned two or three days afterward stating to me that he had met with it in a stream, but that he had been unable to secure it on account of the large number of crocodiles that the recent rains had caused to crowd to this point. Finally, he returned to the charge and brought me some samples in a very fair state, for which I was delighted to pay him liberally, and which I immediately took in charge.

The natives describe the plant as growing upon the margin of running water. The rhizome has a diameter of about 5 centimeters by from 18 to 27 in length. It is often branched in various directions like that of the ginger or curcuma, but is always in a single continuous piece instead of being formed of joints placed end to end. The plant is fixed to the margin of streams by numerous white and slender rootlets that penetrate the mud and clay and keep firmly fixed therein. It grows likewise in stations that become dry at certain periods of the year, and, under such circumstances, the leaves, it is said, are destroyed, but the rhizome preserves its complete vitality and puts forth new leaves as soon as the water moistens or covers the plant.

This plant is one of importance to the natives, who collect it at certain seasons of the year for food. Its rhizome, when boiled, furnishes a farinaceous substance analogous to that of the yam, whence its native name *Ouvirandra*, which means, literally, "water yam," *ouwe*, in the Madecasse and Polynesian languages, signifying "yam," and *rano*, in the former dialect, "water."

The *Ouvirandra* is not only curious and rare, but also very beautiful in color and structure. From the various heads of the rhizome ascend, sometimes from a depth of 30 centimeters, a certain number of graceful leaves borne upon frail petioles, and that extend horizontally just under the surface of the water. The peduncle starts from the center of the leaves and terminates in two geminate spikes. But the leaf is especially eminently curious. One might call it a living fibrous skeleton, rather than a perfect leaf. The longitudinal fibers, extended in curved lines from the base to the apex of the limb, are united transversely by numerous filaments that form right angles with them, the whole exhibiting exactly the appearance of lace or a green embroidery. Each leaf exhibits itself at first as a short and delicate fiber, of a yellow or pale green color. Its sides soon develop, and its dimensions increase. At the various phases of their growth the leaves pass through innumerable shades of color, from pale yellow to dark olive green, and, later on, when they become destroyed, to dark brown, almost black. They attain a length of 30 centimeters and a width of 0.07 meter. I succeeded in carrying my plant to the Isle of France, where, for more than a year, I preserved it in full vigor. It seemed to prosper, especially in running water at a temperature of 74° Fah. I had the pleasure of offering specimens of it to Mr. Boyer, as well as to Mr. Duncan, the director of the Pamplemousses Botanical Garden. At the Cape of Good Hope, Mr. Gibbon had the kindness to take care of it during a five months' voyage that I made in the interior, and I left a specimen of it at the botanical garden of Cape Town. Upon returning to England, I had the great satisfaction of being able to offer this rarity to the Kew Gardens, and to those of Chiswick and Regent's Park.

The species under consideration is not the only one of the genus, for there is also the *Ouvirandra Heudeloti*, Kth., which inhabits Senegambia, and the *O. Bernieriana*, Dene, whose leaves are longer, narrower and more ribbony. These plants belong to the order Hydrocharidaceæ.—*La Nature.*



THE OUVIRANDRA FENESTRALIS OF
MADAGASCAR.

AMERICAN APPLE EXPORTS.

THE apple export trade from this country to England is by no means a new business, for as long as fifty years ago lots of a hundred barrels and upward were sent forward in sailing vessels that took from four to eight weeks to make the voyage. Ten years later slow steamships landed the fruit in from eighteen to twenty-five days, though not always in sound condition. Until 1870, 500 barrels of apples were considered a large shipment, but since 1875, with swifter steamers, the business has greatly increased, and is now a regular department of the fruit trade in which some fifteen firms in this city are engaged, besides half a dozen shipping brokers who see to arranging for space on the steamers and attend to other details of transportation.

In 1880-81, a season of good crops, the enormous quantity of 1,159,380 barrels went to Europe from United States ports alone. The carefully compiled reports of Mr. Mahlon Terhune, of this city, for the years since 1880, show great variation in the quantity of yearly shipments, the result of abundant or short crops. For example, in 1892-93, more than 650,000 barrels were shipped from New York, Boston and Portland; of these apples almost 250,000 barrels, or nearly thirty-eight per cent., were grown in Canada. The shipments made direct from the Canadian ports, Montreal and Halifax, amounted to nearly 546,000 barrels.

The apple export season dates from August to May, and from advance sheets of Mr. Terhune's statistics of shipments for 1893-94 it appears that the minimum quantity of less than 70,000 barrels went out from the United States this season, and but 86,000 barrels from Canadian ports.

These figures indicate, with the single exception of 1883-84, the dulllest apple trade in twenty-five years. Reasons for this unusual export market are found in a short crop, made still smaller by the heavy storms of last autumn, large importations to England from other countries and the prevailing hard times. These exports, although comparatively small, were large enough to diminish appreciably the stock already insufficient for home use, so that prices have ruled unusually high in this market.

The first apples are shipped abroad about August 1, Keswick Codlins, from New Jersey, being the earliest export of last year. The Orange Pippin, a better fruit, follows closely, but the export of these tender summer apples is always attended with risks, and as they are needed at home, shipments are likely to continue

small. During the year almost every variety of American apple is exported, and Fameuse and other delicate apples stand the journey well, Red Astrachan being one of the few kinds which rarely arrives on the other side in good condition. Redskinned apples are preferred in England by the masses, and the attractive King apple is in especial request early in the fall. But there are not enough of these, and in recent years Greenings, which come into market about the same time, have gained a place in spite of their inferior color. But the great export apple is the Newtown Pippin, the first American apple shipped to England. Coming originally from orchards in Newtown, Long Island, the best of these apples are now grown in the mountain districts of Virginia, where they are locally known as Albemarle Pippins. Here the fruit matures early and is ready for shipment by the 10th of November. These pippins, grown on Long Island and in the Hudson River district east of that river, mature later and are not fully ripened and well colored before January. On this side of the continent Newtown Pippins are grown only in the sections indicated. But the Northern orchards are dying out, and efforts at propagation are not successful, and the fate of the Spitzenberg twenty years ago threatens this fruit. Westchester County, formerly a great center for these apples, now produces small scaly fruit, and it seems to be only a matter of a few years when there will be none of these apples grown in the North. It has been thought by some that if the trees were not started from root-grafts, but were grafted high up on some vigorous seedlings, they might once more succeed where they are now failing.

In the Virginia district the fruit grows large and of excellent quality. In New York State three heavy storms last autumn cut prospective orchard harvests of fifteen hundred to two thousand barrels down to a few hundred barrels, but in Virginia the damage was slight and the crop was large and of the good quality which attends a full-bearing season. Quite as many Newtown Pippins went abroad, all Virginia fruit, as in other recent years, and at paying rates, prices in England ranging from 25 to 40 shillings a barrel for No. 1 fruit. They are largely used for table decoration there, and their rich flavor commends them highly, while they have also the crisp and sour qualities demanded in the English market. Their firm flesh and tough skin especially adapt them for packing and shipment, whereas many kinds, such as the Northern Spy, are easily bruised and discolored. The Newtown Pippin is much better known in England than it is here, since nearly the entire crop is exported. Christmas presents of these apples have long been fashionable, and banking firms in this city send abroad sometimes as many as fifty barrels to their business friends. More Newtown Pippins were offered in our markets this season than ever before, owing to the scarcity of other apples, but these were mostly second-rate fruit from this State and culls from Virginia, which in ordinary seasons would find no sale here. The stock of Newtown Pippins is always exhausted by March, and this year exports practically ended with the holiday trade.

Among the latest apples usually shipped are Northern Spies, which remain juicy and highly flavored to the end of the season and are sought after by the best trade. More Baldwins are usually shipped than of any other sort, and these are even later keepers. It has been said of Russets that they are an instance of the survival of the unfittest, but their merits are appreciated by a large number of buyers, and this apple ranks fourth or fifth in quantity exported. It is the longest keeper of all American apples, and is often shipped in April, while it has been sent to Glasgow and to English ports as late as June.

The firm prices which continued in England until February were then broken by large receipts from the Continent, and the demand for such American apples as were still held there was also affected by large receipts from Australia and Tasmania. The bulk of supply in England is, however, drawn from Canada, some of the best apples coming from Nova Scotia. These are of a quality superior to those grown in the United States and have remarkable keeping qualities. Transportation to England costs hardly more than freight into the United States, so that English markets stand the first chance with Canada shippers, especially as there is also a duty of eighty-four cents a barrel on apples brought from Canada into this country. So large a supply of Canada apples found their way to England last winter that prices were often \$1 a barrel less than the same fruit brought here. The average wholesale price for apples in New York for the season of 1892-93 was \$2.50 a barrel, and for the season just passed \$4.50 a barrel.

Many of the apples exported come from Western New York; the largest apple farms have storage houses or cellars provided, and these are also found in many towns, for neighborhood use. At the beginning of winter the storage house or cellar is filled with cold air and closed up with the temperature at 28 or 30 degrees. Later in the season, when the temperature inside rises to 35 or 40 degrees, cold air is again let in. By this means apples are kept until the end of winter without ice. For late holdings cold storage is necessary. Shipments are usually made to commission dealers in the seaboard cities, by whom transportation is arranged for through a shipping broker. The fruit is sent on fast passenger steamships and is stowed in the hold away from the engine and boilers, generally in the forward part of the vessel, where the ventilation is best. In the early years of the trade apples were carefully wrapped in paper and packed in cork or mahogany sawdust, but no special precautions are now taken beyond having perfectly sound fruit. Shipments vary from 500 to 1,000 barrels, sometimes as many as 8,000 going on a single steamer. The fruit is consigned to an English agent, who remits the proceeds of sale after deduction for ocean freight, besides expenses for landing, harbor dues, delivery and sale. Cable advice as to prices is sent to the dealers on this side, and shipments made on such advice naturally result in gain or loss as the English market may happen to rise or fall. New York merchants tell of losing as much as \$3 a barrel, while the highest authentic price ventured upon by a veteran dealer is 105 shillings a barrel for a half-dozen barrels twenty years ago.

The season here is nearly ended, and the few apples held in the interior of the State for trade values will all be disposed of before the new crop comes in from