thrown in the company of one who was a stranger to me. He came from a British warship. Edited his looks then the first, and side by side we will through the streets of Alexandria, Firing all around us—got in humanous. Little, engagements; was acce surrounded by a pack of howling mative traops, who thought they coul. Mr. Grimes you missed wine us out. Mr. Grimes you missed wipe us out. Mr. Grimes, you missed the night of your life in failing to see how Gordon's friend stood off those Bless my soul! I can shut my eyes and look on the whole thing yet. never saw such a fire-eater in action, and yet in repose Joe is as meek as

"After that I froze to him. We saw ne weeks in company—weeks I have never forgotten, because I loved that in. Then I was ordered to watch the Italian operations about Abysila, while Joe went to find Chines Gordon. I lost track of him, but have mever ceased to feel the deepest interest in his work, as an explorer secand only to Stanley and Emin Pasha. Now you can understand my intense light upon hearing that the man we are going to see is no other than comrade in Alexandria, Mynheer

This is about the longest consecutive Sandy give utterance to, which marks the power of that magical name. On his part, the silver king does not prove so confiding. He speaks of the man who interests them both as though acquainted with his past; but whether he has personally met him, Sandy finds it impossible to say.

Meanwhile, they have been making ogress in the direction of the river. A light of some sort is positively needed in these streets after nightfall, moon or no moon, on account of the peculiar custom of building.

The houses, as a general rule, are three stories in height. As the street itself is but an alley, barely ten feet In width, and each story of the houses project beyond the one below it, it is easy to shake hands from the neighboring roofs. Even this small space is often covered with mats, to keep out the garish light of day, which, reflected from the white walls, dazzles the

In these narrow streets men stand in groups engaged in discussion or barter, now and then gently pushed aside by the nose of some camel advancing silently, the "ship of the desert" being, besides the donkey, the only burden-bearer allowed in the native sec-

Here and there a light is seen moving along, as some shelk proceeds someward; but, as a general thing, darkness hangs over the street. In many of the houses, no doubt, gayety abounds; but Arab and Moor believe in keeping their homes sacred from the public, and only huge piles of whitened bricks lie on every side.

As yet they have met with ture, and the distance between the grand square and the river has been diminished by half. This savors of rare good luck, for it is not always that a Frank can traverse this region, at such an hour, unmolested.

Cairo abounds in rascals who do not fear, the English law, however much they may respect the native koorbash and stocks. It is not a sin or a crime to rob a foreigner—unless caught in the act. That is the way they look

Sandy knows this, if his companion does not happen to be so thoroughly posted with regard to the customs of the city on the Nile. He continues to keep his eyes about him, and does not let the Arab who carries the flambeau get beyond his reach, knowing that in all probability in case of an attack the first act of the dusky rascal will be to fly and leave them in darkness to meet the foe. They have even cut down the distance to a fourth and soon the light will fall upon the waters of the river, when the war correspondent bends suddenly forward and snatches the torch from the hand of the astonished carrier.

CHAPTER II.

THE MAN WHO SAW BRAVE GORDON FALL. Mr. Grimes sees the action and does sot appear to 'e at all surprised-indeed, he rarely deviates from the steady repose that marks him as a wonderfully nervy man.

Something glistens in his hand-it is a revolver, and the light gives the blue steel a cruel as well as a cold look. Evidently the stout tourist is ready to take care of himself.

Sandy has clutched the torch, which be at once raises above his head. Halt a dozen ragged forms have sprung into view beyond. Perhaps some arch has secreted them until now. There can be no mistaking their intentions, for quickly they advance, spreading out as if to prevent the Franks, who

from escaping. "Backsheesh!" they clatter like a lot of monkeys, holding out begrimed hands and scowling.

There is only one way to treat these rascals-if you comply with their demands they grow more and more importunate, until they maily proceed to openly rob their victim.

"Stand back!" cries Sandy with a roar, as he swings the nameau around his head.

They understand enough English to know what he is saying-at any rate, his actions are doubly significantbut, believing they can rule the ranch by mere force of numbers, the ragged beggars continue to push forward,

thus bemming the two whites in. Although small in point of stature, Sandy is a warrior, every inch of him, and, as might be expected from his

When the neareaching distance and clutches at him with bony fingers, the newspaper man orings the flaming torch, with a resounding thump, against the top of the peggar's bead. It does not affect the dink, beyond sending forth a shower of sparks, but he unfortunate recip tent of the blow, finding sparks in his

ong hair, utters veciferous shouts and lances with the fervor of a dervish. This is deemed a signal for a general assault all along the line, and for the space of sixty seconds there is seen a spectacle rarely equaled in the narrow streets of old Cairo.

At first the two foreigners are averse to using their firearms, and endeavor to inspire terror in the breasts of their enemies by a generous exhibition of

When Sandy has to dodge a fiendish blow from a wicked dagger he thinks it about time they proceeded to sterner measures.

Sandy opens on the rag-tag-andbob-tail crowd, as he terms them, seeking to inflict wounds and create a diversion. He is immediately backed up by his companion. His strong. white teeth hold fast to his cigar, and even as he lets drive at a dark-faced fellah who seeks to cleave him with an Algerian yataghan, the silver king puffs out a small cloud of smoke. Talk about coolness! Here you have it in a human !ceberg. Sandy holds his breath while looking at this strange companion, and wonders whether he would show excitement in the heat of battle.

This sort of a reception is hardly to the liking of the cowardly curs who have appeared daring simply because their numbers gave them confidence. At the first shot most of them began to glance over their shoulders. This is a sure sign of a desire to retreat. Then comes hotter work. Sandy no longer waits for them to come, but with his revolver in one hand and the flaming torch whirling about his head, he leaps toward the footpads.

This is too much for them—they break and fly with cries of terror, some springing up the street while others go down in the direction of the river. In a marvelously short space of time the street is empty save for one poor fellow, who, shot in the leg, is hopping off as fast as his good leg will carry him, calling on Mohammed to save him from the foreign tigers.

In any under city under the sun, such a commotion at dead of night would create an intense excitement. Not so in Cairo. The white walls shut them in, pierced by minute wirdows that allow little chance of street gazing. Those who hear the sounds of war are discreet enough to know that it is none of their business, and they will be better off away.

"Look out behind you, sir!" calls Sandy, and the silver king turns suddenly to cover a creeping figure that has advanced from a darkened arch way, whereupon the most piteous jargon is heard, and behold the suspected assassin turns out to be their torch earer, who, having witnessed the hot little affair from a place of security, is now crawling back to resume his interrupted duties.

They welcome him gladly, and Sandy relieves himself of the flambeau, glad to be rid of it. As there are no more footpads in view to give them battle, they again take up their line of march for the river, fortunately close at hand. Mr. Grimes has had explicit directions from Mr. Tanner how to reach the boat, and a suspicion has already entered his head that the ambuscade into which they ran might have been arranged by the reis of the sailing craft to relieve his rich employer of superfluous wealth. These Arabs and natives are up to all manner of tricks to gain fifthy lucre, and old travelers come so accustomed to treachery that they are surprised at nothing, and learn to depend upon themselves entirely.

He even mentions the fact, as it occurs to him, to Sandy, who declares there is a strong element of probability about it, and in the same breath swears that, if the occasion offers, be will sift the matter to the bottom and wring the neck of the wily old reis if such a course is necessary to extract the truth.

"The river!" calls out their guide in his native tongue; and the fact arouses the two men to new interest, as they remember why they have come here.

A minute later and they stand upon the edge of the Nile. Just here the bank is high, and at this season of the year the water reaches its lowest stage to the south, though at Cairo there is always plenty.

Below them they can see lights upon numerous vessels, some anchored out n the river, others tied up at the locks. Voices, too, come over the waer from the west-men are singing on some of the coasters that ascend the river from the Mediterranean. All the typical boats seen upon this great sea can be found on the lower Nile Here are schooners, brigs, ships, menof-war-the baggain, felucca, xebec settee and even a patamer from India, while numerous smaller craft and Jahabeahs suited to travel on the Nile lot the surface of the river by day, naking a scene worth remembering

Our two frineds can discern nothng of this now since darkness rests ike a pall over the water, relieved only by the riding lights and lamps on board the numerous craft. Their at tention is directed at once to a point immediately below, where the gleam of several lights proclaims the pres

ence of a boat. As they advance, they make out the clean-cut model of a new dahabeah and can see the dark-skinned Egypt ian sailors squatted on deck forward. while aft, the 'cabin, painted snowwhite, is casily distinguishable.

s to pay him. the roof of the cable, where aptain meets them—e man with led beard, white turban and flowgrissled beard, white the sandy reads ing robes. Upon his face sandy reads a look of perplexity and disappoints this moment he knows that the truth-that they really owe their adventure to this reis, who, believing aire Tanner-would come to the boat, arranged to have his pockets the eggs are as they should be.

tapped while en route. These captains all talk fairly good English, sithough their hatred for the foreigner seens to be an inherited quality. O stwardly they may appear jolly and as meek as lambs, but inwardly they are ravenous wolves.

Sandy has a habit of pushing himself forward; not that he means to be rude, but it is a characteristic of his impetuous nature. To his credit be it said the same thing urges him

found in the van. "This boat is the Alice?" he asks boldly.

The captain removes the stem of his long pipe from his mouth, and gravely nods his head in an affirmative way "We have come direct from Mr. Tanner, to whom you are engaged for the season."

Another solemn nod. "Unable to come himself, he has sent us to see the man you picked up on the Nile-a man who was once my friend."

The native captain looks at him closely, as though mentally figuring just where he should place Sandy. Then he smiles blandly and holds cut

"If his friend, then mine. I have suffered at the hands of El Mahdi and he who is an enemy to the False Prophet is my brother. Shake!" Sandy complies, and gives the old reis such a Freemason grip that it

wrings a groan from the dark-skinned wner of the dahabeah Alice.
Now lead us to your guest. We are in haste," he says, with an assumption of authority that no one ventures to dispute; for, despite his lack of majestic proportions, the war correspondent has the air of one born to command. It is not stature that makes a leader like Napoleon.

"Follow, gentlemen," says the captain, with a majestic wave of band.

They obey willingly. The door of the cabin is close by. Or either side are the steps leading to the promenade on the roof, over which an awning is stretched, for it is here that the tourist lives during the day, for the cabin, beginning amidships, extends to the stern. When the cabin-door is opened they behold a splendid interior. Money has not been spared in fitting out the Alice, and only a millionaire like Tanner could engage such a lovely craft for the season.

A lamp is turned low, so that something of a dimness rests upon the interior, but the sharp eyes of Sandy have already discovered the figure of a man upon a divan.

"Enter, gentlemen," says the old

Straight across the luxurious cabin strides the newspaper correspondent direct to the lamp, which, with a turn, he causes to send forth a flood of light. Then he faces the recumbent figure on the couch; recumbent no nger, for as though the voice of reis at the cabin-door has broken the chain of slumber which exhaustion has forged around him, the castaway of the Nile has raised his body with one arm and looks at them in a way that proclaims his bewildrment; the bright light dazzles his eyes, too, so that with his other hand he shades

It is a picture—Sandy, standing there, bending eagerly forward, his eyes glued upon the bearded face of the other, and actually holding his breath as he gazes spell-bound. The man who thus half raises himself upon the couch is worthy of a second look. His figure is splendidly proportioned. though not above the ordinary in point of size. It is the face that must interest an observer most of all-a face that is marked by determination, valor and frank fearlessness. This man has seen suffering in the past; he shows it in his eyes, and yet it has not crushed the spirit that leads the explorer to seek new honor and renown amid the dangers of unknown wilds, pestileutial swamps or in the depths of an African desert. ITo be Continued.1

Have Effigies on Coins. A new issue of silver 2-shilling pieces by the British mint has on it s figure of Britannia which is a portrait of Miss Susan Hicks-Beach, whose father, Sir Michael, was until recently the chancellor of the exchequer. This pecuniary perpetuation of a nonroyal lady has its precedent in the duchess of Portsmouth, who in the guise of Britannia has decked at British copper coins since the time of Charles II. The head of Liberty which adorns the silver dollar of the United States reproduces the features of a young school teacher of Philadelphia A century ago the Rothschilds adorned their bank notes with the benevolent face of Baroness de Rothschild. In 1897 the state bank of Budapest engraved the countenance of Mme. Luise Blanha, the prima donna, on its thousand gulden notes.

Thousand-Year-Old Cedar.

There are many large specimens of the brown cedar, Juniperus monosperma, is the Garden of the Gods, Pike's Peak, Colorado. Prof. Bessey of the University of Nebraska, during a recent visit to that place, made an effort to ascertain the age of some of the magnificent specimens. He was fortunate enough to find the stump of a recently cut tree on which it was easy to distinguish the annual growth rings. These were counted for a section of the trunk, care being taken to select a portion in which the rings were of average thickness, and on this basis the number of the whole stump was calculated. In this way it was found that this particular tree was between 800 and 1,000 years old

id be done now, so the cockrel will be in better condition for the service for early eggs. The early chicks are the cases that bring the highest prices. Get pure birds if you do have to pay some more for them. March is not too early to begin to save eggs for early hatches, and if the breeding stock has been purchased as indicated, the chances are ever so much better that

Remember that trees get ripe the same as wheat or other crops. Whenever trees are ready to cut they should be made into fire wood or lumber. But this does not mean the destruction of the forest. If the trees which have attained full growth and are fully matured are cut down, younger trees may remain. Then numerous young trees will spring up on every side, and the in the years to come. I believe in retaining at least a small wood lot on every farm.

Pullets Are the Egg Producers Pullets that were hatched in 1903 should now be laying an egg every other day. While eggs are selling at twenty to twenty-five cents per dozen is the time to give particular attention to them. . They must have warm quarters so they can rest at night and be ready for forming the egg and taking exercise in the day. Where the farmer has well cured clover, if it be cut into lengths of an inch and soaked and mixed with meal, the pullets fed on this will have red combs, and eggs will come in rapidly.



A. .. Bailing Shredded Corn

Since it has been demonstrated that corn stover is economically shredded much of this work is being done, and it has been noticed that considerable of the market in sections where considerable feed has to be bought. Of course this baling is done by men who are familiar with baling hay, but there is no reason why the farmer can not do it himself if he is located near a market. where there is likely to be a demand for the stover put up in such a manner. Where there is a shortage of the hay crop or of crops used by stock as oughage there is likely to be a market or the baled stover.

Care must be used, however, to have properly cured before it is baled. It hould be cured in the shock as much s possible and then finished in the orn stover.

Crop Botation and Fertility. It has come to be well understood by nost successful farmers that one of the things essential in farm management is crop rotation, if soil fertility is be preserved. The nitrogen from the air deposited by the legume crops, and the humus resulting from growing them in rotation are two things put lown in the plans of good farmers. This location should be adjusted to the tharacter of the different soils, but it is essential for all of them. The following systems of rotation has been strongly recommended by one who has riven much attention to the matter. Three years' rotation would be best suited to rich river bottom soils that are naturally adapted for the production of corn and easy to cultivate. The rotation might be as follows: Corn, corn, cowpeas or soy beans; corn, corn, cowpeas or soy beans; corn, winter wheat or barley, cowpeas or soy beans. The four years' rotation is suited to the same class of soil as the three years' rotation, but it has the advantage of being better suited to the medium class of soils, as the land can be kept in clover for two years. On soils of medium fertility the rotation might be about as follows: Wheat, clover, clover; corn; corn, corn, clover, clover.

The five years' rotation would be better suited to a still poorer class of soils than the four years' rotation. On this type of land cultivation is not desirable more than once within three or four years. The rotation might be winter wheat, grass, three years corn.

Bees and Fruit Growing.

The entomologist in his work meets with two immense groups of insects, those which are injurious and these which are beneficial, says Professor W. Newell. There is no need of discussing the former class; the various insects which destroy our fruit trees, garden and field crops, and infest stored products of various kinds are examples. As a matter of course this group has received the most attention. It is but natural that the attention of the farmer or fruit grower should be more forcibly attracted to the death of his trees or crops than to the constant yet quiet and unassuming work of insects which successfully hold in check many injurious species. Nevertheless, it is as much the duty of the entomologist to assist in the increase and distribution of beneficial insects as it is to devise means for controlling the injurious ones.

As a matter of convenience we may place the beneficial insects in two groups, those which are indirectly of benefit to mankind by their parasitic habits upon injurious species and those which are directly beneficial in that ing shed.

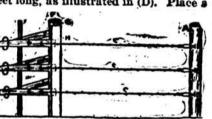
very minute insects res wasps which live as parasites the adults, larvae or even eggs of de structive pests.

Of insects directly beneficial we may cite the silk worm, the cochineal insect and the honey bee. It is with the lab ter that we now have to deal. The relation of bees to fruit growing has not received much attention from the avenage orchardist. I am convinced, however, that it is a subject of much more importance and a discussion of this relationship will. I trust, be of some little interest. It seems to me very essential that we should arrive at a clear understanding of the relationship of these two industries, horticulture and apiculture, as they are of mutual benefit to each other.

Soil Preparation It has been demonstrated that when the harrow is used over growing wheat early in the spring the result is beneficial, and it is when the wheat is harwood lot will be renewed for cutting rowed that the grass seed should be sown, if grass or clover are to follow a grain crop. It is important that the seeds be covered; and if the field be harrowed there will be less loss of seed and greater chances for a good stand. As an application of nitrate of soda or wheat in the spring pushes it forward very rapidly, it soon reaches sufficient height to shield the young grass from the extreme heat of the sun. The har row may also be usually employed to mix fertilizer with the soil at the same time. The ground upon which grass seed is to be sown deserves more atten tion than the grain crop, for if the grass crop be intended as a permanent pasturage it must not be overlooked that weeds will spring up to compete with the grass, and for that reason the ground must be very clean. It is best therefore, that grass should be seeded on land that was previously in corn, as the extra cultivation required for corr better prepares and cleans for the grass which is to follow.

> - 11c Wire Gate.

The following is a description of a cheap and serviceable wire gate which will be found satisfactory, especially it places where a gate is not often used It, of course, will not do for sheep of hogs, but will serve the purpose it cattle pastures where a three-wire fence is sufficient to confine stock. Cur three wires each about a foot longer than the distance between posts, and three short wires each six inches long Form the short wires into loops and fasten to post (A,) (B, B, B,) with staples, the desired distance apart Hook the long wires (C, C, C,) inte this shredded stover is being put on to the loops (B, B, B,) so as to form hinges. Shape three boards each four feet long, as illustrated in (D). Place s



wire ratchet on each of these boards about six inches from the end (figure E, E, E,), attach the other ends of long wires to ratchets. Nail an inch board (figure G) four inches wide the height arn. After the stover is shredded it of post to post (F). Nail another board will usually sweat some, and when (H) on top of this overlapping the his is over it is fit to bale. It is ad- first an inch or two. Drive a stake (I) rised that one look into the conditions inside of wire fence three and one-half feet from post (F). Nail three pleces unities are for a market for baled of board (J) each three feet long, on inside of post (F) and also inside of stake parallel to wires. Tighten up wires on ratchets (E, E, E,) sufficient so that when each of the boards (D. D, D,) are inserted into slot (H), and pushed back into position against (J) the wires will be taut. Three rings, one for each pair of boards, slipped over the ends, hold wires in proper position. If one would prefer four wires instead of three, another one can be added.-Jas. Cotter, in The Epitomist.

Horse Talk, Heavy-coated horses should be clipped now, just as the hair begins to

Blanket warmly and make the skin active by a vigorous, thorough brushing from head to heels every day. The health and thrift of the horses

will be improved in this way. Keep a stubby broom in the stable to brush all the mud and ice from the horses' legs. Then rub them dry with a wisp of straw.

Rheumatism and chapped heels result from carelessness in this way. This is the time to train the colts and

young horses. Carefully accustom them to all sorts of things. Teach them to hold the cart back

with their hind quarters as well as the breeching. Let wheels run off, open umbrellas over their heads and under Let straps and things hit their legs

Let them understand that they will not be hurt and they will submit to almost anything. It is the low-voiced, sympathetic,

self-controlled, firm person who should It is not the man who breaks the olts, but the one who trains them who does the most good.

The heaviest feed should be given at night when the horses have time to digest it. When horses are taxed to the limit of their endurance all grain should be

ground and fed on moistened cut hay. Some long hay should be put in their mangers for them to nibble at while they are resting. The morning feed should be mostly

grain and not bulky. Water before feeding always. Give a horse a chance to drink often

and he will never take enough to injure himself. For over-reaching-"forging"-lower the front foot, shorten the toe and bring the heel up and set the shoe well

back. Set the hind shoe ahead and cut down the heel. Most blacksmiths do the opposite.

Stay with your horse while he is be-



HOTHOUSE TOMATO DISEASES. Greenhouse tomatoes, like many ther plants, are frequently troubled with root galls caused by eel worms or sematodes (see illustration reprinted by permission of Secretary C. L. Ellsworth, of the Massachusetts State Board of Agriculture). These worms affect some plants much worse than thers. The tomato, however, does not show the effect of gall-infested roots is much as the cucumber and musknelon, the latter plant being especialy susceptible to them. The remedy or eel werms consists in soil desicca-



ion, or either freezing or sterilizing. The latter method of treatment is the nost effectual, and where conveniences ire at hand for doing this work it is 'ully as cheap. Whatever treatment s employed care should be taken to reat the manure, as our experiments



lave shown that the manure pile contitutes one of the greatest sources of infection for eel worms. This speies of eel worm is not indigenous to our climate, and probably very rarely survives in our soil over winter. It loes, however, winter successfully in infrozen manure heaps.

Under the head of fruit rots are included troubles caused by a number of organisms possessing different haracters, such as bacteria and fungi, which cause a rotting of the fruit (see Ilustration). Fruit rots are common to both greenhouse and outdoor tomacoes, and the general practice has been to spray tomato crops when grown out of doors. The results from spraying experiments are not, however, entirely satisfactory in all cases, partly, no doubt, from the fact that a number of lifferent organisms have been involved n fruit rots, some of which appear to be more difficult to control than others.-Connecticut Farmer.

HORTICULTURAL NOTES.

If the old rhubarb roots have "run out" take up, divide and replant. Good putty mixed with one-twelfth ts weight of white lead is the best material to use in fastening the glass n hotbed and greenhouse sash.

Never prune grapevines during the months of March, April or May, as the bleeding will occasion a wasteful and an injurious expenditure of sap.

"Will it pay to grow celery for a market seventeen miles distant that can only be reached by wagon and team?" Certainly. You can haul a good many dollars' worth of celery with two

Do not be in haste to remove the mulch from strawberries. If not very beavy, they will work their way out. If clean when laid up last fall they should not be cultivated or hoed; just pull out the big weeds.

"How late can asparagus roots be set?" We do not know, but the earlier the better. "Can roots that have been planted from two to five years be taken up and transplanted to a new location?" Hardly with profit. Better buy thrifty one-year roots.

How can you clear clayey soil of a garden of angle worms and ants? Fifty bushels of lime per acre will help to dispose of the angle worms and the ants will probably disappear also. Lime will change the texture of clayey soil, making it lighter and more fri-

able. Good early lettuce is a luxury for which our friends in the city pay twenty or twenty-five cents per pound. In three or four weeks one may have nice crisp lettuce by planting any early variety in the bothouse frames and covering with sash. The glass need not be puttled in the frames, so that a pane can be lifted out on a sunny day and the leaves cut. Lettuce should be cut off and the stalk kept growing.

Watercress may easily be grown in the shallows of any pure water stream that has a sandy or gravelly bottom, a steady flow and a moderate current, if the seeds are sown in early spring in the moist soil at water level; or a crop may be obtained sooner by pegging down cuttings in an inch or two of water till they take root. It needs uo cultivation after planting, except to be kept free from weeds and aquatic grasses. It is an excellent addition to a meal and sells readily in market.

A Remarkable Memory.

A remarkable memory of faces is one of the attributes of George Denny, bead watchman at the State. War and Navy Building. It is as head doorkeeper after the office hours that Denny's peculiar gift stands him in good stead. Like the other Government buildings, no visitors are allowed at the State, War and Navy after 2 o'clock. Many of the offices remain open until 5 o'clock, however, and there is a constant stream of officials. messengers and newspaper men pouring in and out beyond the time that the doors are closed. Denny never makes the mistake of holding up the roads and bearing a large share of the Wrong man.-Kansas City Journal. expense



MONG the men whose names will live as long as civilization exists is that of John L. Macadam, the road builder. Not only has his name become a part of the English language, but the kind of road which he built has been adopted by all civilized nations. The ancient Romans built stone roads, but they were very different and vastly more expensive than the macadam roads of modern times. They built a substantial foundation of rock, sometimes several feet in depth, and then covered it with a pavement of large flat stones. This kind of road will outlast any other. Indeed, some parts of the Aplan Way, the building of which was begun three centuries before Christ, are still in use, and in good repair. It remained for John L. Macadam, a modern Englishman, to prove that the great expenditure of time and money required in the building of the old Roman roads was largely wasted. He demonstrated that a smooth, hard, enduring road could be built of crushed stone a few, inches in depth properly spread and compacted on a foundation of earth.

The main points in successful macadam road building are: (1) That the foundation be properly constructed and drained; (2) that the surface of the road be elightly curved so as to shed water; and (3) that the surface of the finished road be made hard and smooth and as nearly waterproof as possible, The last of these qualities is secured by spreading on the stone in layers, beginning with a layer of the largest fragments and finishing with a layer of very fine crushed stone with which some sand is often incorporated. Each layer is well compacted with a heavy

Although the empense of building maccdam roads is trifling compared with that of constructing a stonepaved road like that of the Roman Emperor, Applus Claudius, it is still so great as to form the principal obstacle to macadamizing modern highways. The cost, of course, depends largely on the case with which suitable stone may be secured. Where the material has to be transported by rail for a considerable distance the cost ls greatly increased. Some of the Massachusetts highways have cost \$8000 to \$10,000 a mile; while in some other. States good macadam roads have been built for \$1500 to \$3000 per mile.

Some friends of the good roads movement hesitate to join in the demand for national aid because they are appalled by the enormous expense involved in macadamizing the entire road mileage of the country. Such persons are laboring under a mistake. The national aid bills now before Congress do not propose to construct any particular kind of road. They simply propose to "improve the public roads," and provide for "investigations and experiments to determine the best kinds of road material and the best methods of road building." In a recent article Representative Brownlow,

Bays: "My own individual opinion is that some of the principal thoroughfares ought to be macadamized. Well informed road experts have estimated that if one-tenth of the road mileage of the country were macadamized and the other nine-tenths were improved in other and cheaper ways, using the best local materials available, the cost of hauling the farm products of the United States to market would be re-

duced one-half." If this estimate is correct, the saving to the farmers would be enormous, and would in a few years be sufficient to cover the entire expense of making the improvements. Besides lessening the cost of hauling, good roads will bring to the people of the rural districts pleasures and benefits which cannot be measured in money.

Drift of Population to the Cities. No tendency of modern times has caused so much uneasiness in the minds of social philosophers and reformers as the drift of population from the rural districts to the cities. That this tendency is deplorable is admitted on all hands, but there is no general agreement as to what should be done to discourage it. Recently, however, public speakers and writers have been insisting that the way to keep the bright young men and women on the farms is to ameliorate the conditions of country life. The extension of telephone lines into the country, and the rural free mail delivery are steps in that direction; but the general improvement of the country roads would be a far more important step. Bad roads do more than anything else to promote ignorance, isolation, discouragement and disgust among the country people. Good roads promote attendance at school and the church: they make social gatherings, literary societies, dramatic entertainments, and club and lodge meetings possible during the winter and spring. With bad roads the farmer is compelled to bibernate, socially, for three or four months in the year. With good roads, these months become the most pleasant, and, in some respects, the most profitable in the year.

The improvement of the country reads is now recognized as one of the greatest questions before the American public, and it is coming to be recognized as a question which concerns not merely the rural population, but the whole people.—Automobile Topics.

Movement in New England. The States which have made the greatest progress in road building are Massachusetts, Connecticut, New York and New Jersey, and in these States the interest in road improvement is greater than anywhere else in the country. This is what one would expect since the building of one good road naturally breeds a demand for more of the same kind. All these States are working on what is known as the State aid plan, the State co-operating with counties and townships in building the