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VOL. II

NO 8

# THE WESTERN APIARIAN,

AND

RANCH <sup>AND</sup> RANGE.

PLACERVILLE, JULY, CALIFORNIA.

1890

McCallum Bros. Publishers.

Subscription,

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◁ AND ▷

✿ RANCH <sup>AND</sup> RANGE. ✿

◁ PLACERVILLE, JULY, CALIFORNIA. ▷



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Fifty envelopes printed with return to name and post office address, 30 cents postpaid. Just what they would cost you at the store, blank.

Any printer would charge you \$ 1.50 for the above goods.

Mr. W. W. Maltby says of the above: "I am astonished to see how nicely you get them up."

### TO ADVERTISERS.

In soliciting your advertising patronage we would call your attention to the fact, that in the past we have allowed our advertising space to be used ONLY by those engaged in the Bee industry.

But now that we have added an agricultural department, we intend increasing its advertising space, and will insert "ads." of an agricultural nature.

We would further state, that our Journal circulates among the most advanced Beekeepers, Fruit growers and Agriculturists in the country, and these are the most desirable class to be reached by those who deal in supplies.

We wish also to say, that we will admit no "ads." of a doubtful nature, neither have we space for Patent Medicine "ads." Society Notices, or in fact any ad." that is not of direct interest to the Beekeeper or Agriculturist.

Our Journal goes into the hands of thousands of Bee men, Farmers and Fruit growers, who would be your best patrons, and who cannot be reached by any other journal.

We guarantee a circulation of at least two thousand copies per month, and as our subscription list is growing with great rapidity, we will undoubtedly be issuing five thousand copies monthly in a short time.

Under no circumstances will we allow our advertisements to encroach on our reading matter.

### OUR PREMIUM.

We will send to every new subscriber to the Western Apiarian the following as a premium:

Twenty five sheets fine linen note heads, nicely printed with your name and address; our price, 30 cents; printers' rates, 75 cents.

25 envelopes neatly printed with name and address, our price 30 cents printers' rates 75 cents. Six fine steel pens, our price 5 cents, store price 10 cents. One blue and red Dixon' pencil, our price 10 cents; store price 15 cents. One fine rubber-tipped leap pencil, good value for 5 cents. One Rancher's Scribbling Book, our price 5 cents; store price 10 cents.

At the store or at any printing office you would pay \$1.90 for the above assortment of goods that will be purchased and used within six months by every family in the land. We offer them, packed and absolutely free, to every new subscriber to this journal at 75 cents.

Postage on the above, when sent as a premium, 10 cents extra.

We will withdraw the above offer after this month, as the premium is of more value than we charge for both paper and premium. The W. A. is cheap at 75 cents. This is your last chance for this premium.



The question of California's representation and display in the apicultural department of the World's Fair is a most important one, and we take time by the forelock and come out with our ideas, hoping in this way to start discussion and work.


We desire to bring forward the name of one of California's most extensive, eminent and successful bee-men as the person most fitted to take charge of California's display.

We refer to Mr. L. E. Mercer, of Ventura, who is not only one of the most practical and extensive beekeepers, but has made some of the finest displays that California has ever seen. He is eminently fitted for this position and to his care the exhibit could be safely entrusted.

California ought to do her best at that time, but it will require concurrent effort on the part of all our bee-men, to make the exhibit what it ought to be.

The columns of the "Western Apianian" are open to all that we may bring this important subject into prominence.

We have received a large number of reports that we hold over until we can present them systematically. We hope next month to be able to make definite statements as to the honey crop of California and the West.

 We call the attention of beekeepers to the blank on page 15 of this number.

To have carefully compiled accurate statistics of the bee industry is of great importance. Will you not at once, sit down and fill out this blank and return it to us.

We would also like to have your co-operation in this work. If you will circulate them among the bee men of your vicinity, we will send all the blanks you can use. We want such a report from every beekeeper in America, and it will not be our fault if we do not have.

Please do not defeat all our plans and work when so small an effort on your part will make them a success, and give us what we never have had

before, accurate statistics of the honey crop.

We doubt if there is an industry in America, of the same dimensions, that has as many patent rights and inventions attached to it as the bee industry,

We by no means deplore this fact, as it is a very fair sign of the prosperity of an industry that so many devices are invented for its benefit. He is a foolish man who buys a saddle for a sick horse; and as the majority of the inventions are patented—a business transaction that costs quite an item; we think this proves conclusively that the inventors at least have a great deal of faith in the growth of the honey industry.

## Bees At Swarming Time

*For The Western Apianian.*

By GEORGE H. BROWN.

Do bees select their future home before swarming, is a subject that has been discussed so often that it has become a trifle musty; nevertheless I would to say a few words on the subject that may prove of interest to at least a portion of the less experienced bee keepers.

In the first place I think we ought to consider each colony of bees as an individual bee, and as far as my experience goes, I think there is as much difference between two colonies of bees of the same kind; as there is between two men of the same nation.

Any beekeeper that will closely notice the actions of his bees, will soon discover that certain colonies possess peculiarities, and whatever that peculiarity may be, it is possessed by the entire swarm in an equal degree.

I think this goes a long way towards proving my statement that a colony of bees are simply an individual bee, controlled by one power,—the queen — and whatever failings or

good qualities the queen possesses every bee in the colony possesses the same quality in an equal degree.

And now let me give two incidents that came under my own observation, respecting the subject of bees selecting destination before leaving the hive.

A few years ago I was running an apiary in the mountain districts of California; and one day in passing through a piece of woods about a mile from my home I discovered a bee tree.

This was in the middle of June, and a few days after, I returned to the tree, with an assistant, prepared to capture the bees. It was no small matter to fell the tree, and you may judge of our astonishment on discovering that our colony consisted of about fifty bees, without queen, combs, or in fact, any thing else. The truth at once dawned upon me that our own colony of bees were simply the advance scouts sent forward to prepare a home for the coming colony.

While we were examining the tree, we heard a humming noise above us, and upon looking up discovered a very large swarm of bees coming directly to the place where the tree had stood. Reaching it, they settled down on a limb close by. We had no trouble in securing them, and on taking them home, my boy informed me that one of the colonies had swarmed and gone off in the direction of the identical tree that I had cut down. I am satisfied in my own mind that I brought back my own swarm of bees, and that they had prepared the tree for occupancy before swarming.

Incident No. 2:—I once saw a swarm of bees come out of a hive, make a circle, and settle on a log within a rod of their own hive. They seemed to have no more idea of where they were going than a Universalist does when he dies.




## How I Commenced — Bee-keeping —

*For The Western Apiarian.*  
By Wm. STYAN.

### CHAPTER II.

Soon after this I purchased 30 hives of hybrids and at once became a full-fledged apiarist. I got experience enough now as regards the "business part" of the honey bee, for such stingers I never saw before or since. My hands and face were so swollen that some of my friends hardly knew me, and the knowing ones concluded that I must be crazy about bees. Having read a great deal about the Italians, I sent east and got some queens and Italianized part of my stock. This had the effect of reducing the swellings considerably, and I now found it a pleasure to work among these much superior and more gentle bees. I was very successful in getting good crops of comb honey, and I was at one time so enthusiastic, or crazy, that I used to rise at 2 A. M. walk three miles to my bees, work at them for two or three hours, and return in time to commence my daily occupation. I moved the whole 30 colonies twice in three years to a distance of three miles each time. I then added a supply business and began to teach my son, thirteen years of age, the art of beekeeping. He is now fifteen and has given his experiences on several occasions in this journal. He can now introduce queens, transfer, divide, mail queens, unite, cut out cells, and he has lately shipped nuclei to Japan without any assistance from anyone. He bids fair to become a professional apiarist. Our business is increasing every year, and I may say I have been fairly successful as an apiarist although my first attempts were not a brilliant success. I strongly recommend all who are commencing beekeeping to begin

in a small way—perhaps not quite so small as I began, but begin with one or two hives, and when you can manage these properly you can manage one hundred or more.

 TO BE CONCLUDED.

## Hints to Queen-breeders.

### On Shipping Queens Long Distances.

FOR THE WESTERN APIARIAN.

By Wm. STYAN.

A great many queen-breeders lose no end of queens and consequently lose money by using poor candy and badly made cages for shipping queens long distances. A short time ago I received from the East a consignment of six queens which were such a mixture of candy and bees when I received them that I felt quite sorry to see so many fine queens killed through carelessness in shipping; and as they were sent to me "safe arrival guaranteed," it was quite a loss to the sender, as each queen was worth from \$3.50 to \$5.00. Having received queens from other breeders in much the same state I felt determined to write a short article on this subject, thinking it might be of benefit to queen breeders in general, and may possibly be the means of saving time and money, as well as the lives of dozens of valuable queens. I think I may claim to have had a fair amount of experience in shipping queens long distances; as many of your readers are aware that I have shipped several colonies and nuclei to Japan during the present and past seasons. (a description of my method of sending nuclei to Japan has already been given in a back number of the Western Apiarian.

In the first place then I will say a word or two as regards the kind of cage to use. I have seen and tried a great many kinds of cages but I believe the very best I have yet seen is known as the Benton cage.

This cage was introduced to my notice by Mr. A. I. Root, Medina, Ohio, who is (I believe) one of the the best authorities of the present day on bees and apiarian supplies and appliances.

I have tested the Benton cage and find it all that could be desired when properly provisioned with well made candy.

And now regarding the candy; the majority of shippers make their candy too thin, so that during warm weather the poor confined bees get so besmeared with it that they are often dead before they get well started on their journey.

The proper way to make good candy for this purpose is as follows:— stir sufficient fine powdered sugar into good thick honey to make a very stiff dough, and let it stand until it is so hard that it will not run, this candy should be placed in one end of the cage entirely separated from the bees with the exception of a small hole large enough to admit one bee at a time to have access to the candy.

The cage should be large or small according to the distance the queen has to travel, a large supply of candy being necessary for long distances.

I hope these few remarks may draw the attention of our breeders to this important matter, and if they have no desire for pecuniary advantage, let us hope it may at least be the means of saving the lives of hundreds of valuable queens, now lost through carelessness, improperly provisioned, or badly constructed cages.

Bees in some localities that have done nothing for the last three years, are reported as doing remarkably well this season.

B good 2 Ur Bs and U may B sure they will B good 2 U.

Don't fail to send us your report, as it is of great importance to all.



## Practical Queen-Rearing.

*A Simplified Treatise.*

FOR THE WESTERN APIARIAN.

By S. L. WATKINS.

### CHAPTER IV.

Propolis is a gummy substance collected principally from resinous trees and plants; and is used for the purpose of stopping up all cracks and crevices that admit light or air.

Some races of bees gather a good deal more than others; the Italian bee using about as much as any, while the Carniolan race uses little or none at all. Frames and bottom boards are sometimes glued pown so tight that it makes them very difficult to remove.

Beebread consists chiefly of the pollen of flowers, and honey mixed together. It is an indispensable article when brood rearing is going on lively or at any other time when they are raising brood. A vast quantity is sometimes stored in each hive. Bee bread contains a great deal of nitrogenous matter and appears a supplement to the more carbonaceous and hydrogenous honey. Some varieties of flowers that yield pollen are very scanty in honey, others at about a medium; for instance, take the fragrant white flowered flocio. Manzanitas yield very little pollen. Again, certain seasons produce more pollen than others. In dry seasons there is the most pollen.

### FERTILIZATION OF PLANTS.

Bees are a wonderful aid to fruit growers in fertilizing the blossoms. It is a well-known fact that certain varieties of trees, plants, flowers, etc., require bees for their fertilization. Certain species of plants have certain insects for their fertilization; again,

the wind acts as a fertilizer for certain species of plants. Flowers raised in green-houses require artificial fertilization. The owners accomplish this by means of feathers. They mingle the pollen of the various flowers together and produce artificial fertilization. At other times they place swarms of bees in their greenhouses which answers the same purpose.

"Sex is not confined to the animal kingdom alone, but extends to the vegetable kingdom as well. The sexual organs of plants and vegetables are located in their blossoms: that is, plants having both stamens and pistils. But we sometimes find blossoms having only stamens, or male organs; other having only pistils, or female organs; and the male or female blossoms may be borne on the same plant or on different plants." The office of the stamen blossom is to produce pollen for fertilizing the pistillate blossoms. The fragrance of the flowers is made to attract the bees.

THE END.

## THE BEE-HUNTER.

A Tale of Forest Experiences.

For The Western Apiarian.

By GEORGE PETERS.

The honey bee, though not a native of America; has become thoroughly domesticated and has spread all over our continent. The forests of America are full of bee trees and there are a great many who make a business of hunting them.

The professional bee hunter frequently belongs to that portion of humanity that enjoy the frontier life and that cannot endure the restraints and conventionalities consequent upon an abundance or super abundance of neighbors.

I want to give you a few incidents related to me by a professional bee hunter, and the impresion he made up

on me.

During the summer of forty two, I was engaged in surveying and engineering work in Northern Michigan.

We were in a densely wooded country, and game was abundant. I frequently took my gun and went in search of something in the way of meat to add variety to our somewhat monotonous fare.

On one occasion I had traveled quite a distance without success and was seated on the trunk of a large fallen tree, when coming through the woods I saw a person approaching dressed in the garb of a backwoodsman.

One thing immediately struck me as peculiar: he carried no gun.

To see a frontiersman without a weapon was so strange that I was immediately interested in him, and on his approach, succeeded in getting into conversation with him.

I was greatly pleased with his simple unaffected style of speech, and his unassuming yet dignified manner, and we then and there began an acquaintance that afterwards ripened into a sincere friendship and lasting companionship.

Allow me to formally present him as he thus stands before us, clad as a western hunter: yet without gun, Jacques Le Rue, born in the Gaspé peninsula but by choice a dweller in the forests.

I soon learned that he was a professional bee hunter, and my interest in him was immediately increased, as he was the first bee hunter with whom I had come in contact.

He carried with him a small box that he used in his efforts to find the storehouse of the bee, and which I afterwards frequently had the opportunity of seeing him use.

It was not large and seemed to be his only implement. I will give you a description of his box and his method further on, for when he invites one to go with him in search of honey, I will take you, my readers, with me, and you will have the same chance to see and understand that I did.

As I learned that he was about seven



miles from his cabin, I invited him to our camp to stay the night with us.

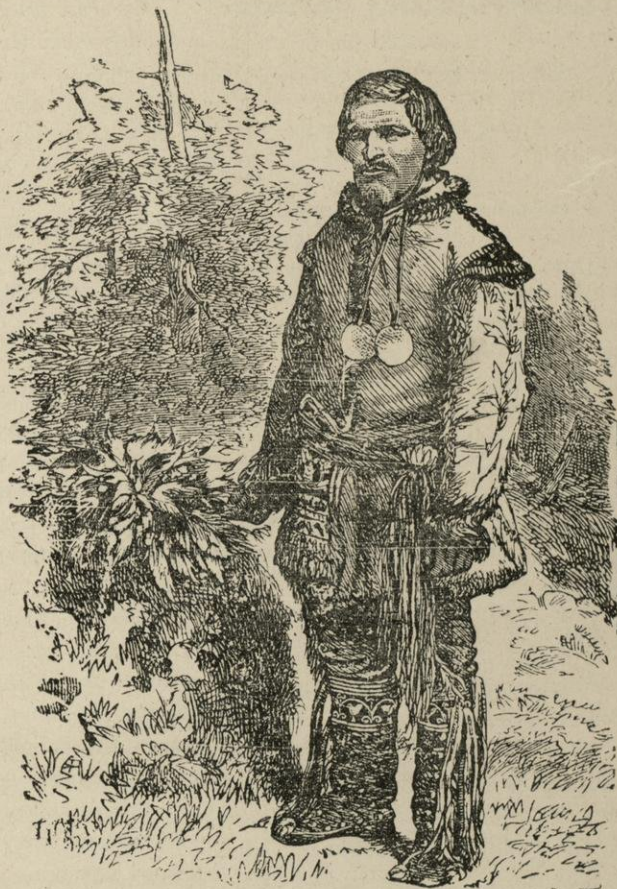
My invitation was accepted with the charming frankness that was the characteristic of every word and action of this graduate of nature's great forest college, and we set out for the camp which was about a mile and a half distant.

Though born of French parentage, Jacque, or Jack as we shall call him, for it is the same thing, could talk English well, though with a peculiar accent that the Frenchman never loses.

He told me on the way to camp, that he had been all over the west having spent twelve years in his favorite pursuit, mostly in the region of the great lakes; but occasionally making an extended tour. He had twice been as far west as the Rocky Mountains—quite an unusual thing at so early a day—and had once gone within the Arctic Circle; but, with a laugh, he said bees did not do well so far north.

At supper I expressed myself as being sorry that I could not offer him some fresh venison, but as I had shot nothing I could not do so. This immediately led us into an argument in which Jack took high ground against killing the deer and other animals of the forest, maintaining that honey and vegetables, with a little meat occasionally, was the proper food for man. That "little meat occasionally" struck me as something peculiar, and I wanted to know where it was to come from.

He said that in his opinion the deer and game of the forests should be left almost untouched, and man depend on domesticated animals for his meat; for if the deer and other forest animals are slaughtered in such numbers as we know they sometimes are we will soon have but few left and how solitary and how desolate would the forest be without its antlered denizens.



JACQUE LE RUE.


I looked at him with wonder! Was it possible he expected the forests to stand! Could he not hear the tramp of the coming millions who would in a few decades more, spread over the entire country, felling the forests and driving the affrighted deer before them.

Then he spoke of the cruelty of killing these animals and I saw that he imagined his business was free from all cruelty. I saw I had him and did not spare him. Suppose some great power were to enter some unoffending city and destroy their buildings and take away their goods, leaving hundreds of dead behind, would you not think it a great piece of cruelty? When you cut the tree that the

bees have taken possession of, you enter a populous city full of wealth and wonders, and utterly despoil it, leaving ruin and death behind you.

No! no! friend Jack, do not look so startled at this new light thrown on your business. We are all simply following the inevitable and, as nature intended, compelling animal and insect to furnish forth their stores to supply the wants of the lords of creation.

With a laugh he said: "I see we are all alike after all;" but I saw that he was only half convinced.

 Continued next month.

Subscribe for the  
**WESTERN APIARIAN**



## California Bee Disease.

FOR THE WESTERN APIARIAN.

By S. L. WATKINS.

During the season of 1889, in parts of the central and southern portions of this state, all the bees in some large apiaries died or disappeared, and over large tracts scarcely a colony escaped.

Some Santa Clara county apiarists supposed their bees were being poisoned, so rapidly did they die off.

The disease is not new, as some beekeepers suppose, as it has been known in California ever since Harbison started his first apiary in Sacramento County.

It is only certain seasons that the loss of bees amounts to anything.

After several experiments, and extensive correspondence with a great many parties in different parts of the infected districts, I have arrived at the conclusion that it is caused by the fermentation of fruit juice, gathered by the bees during seasons when the atmospheric influences are favorable for the growth of mold, mildew, etc. The season of 1889, accompanied by late frosts, had about destroyed the fruit crop, leaving a thinly scattered crop of diseased specimens, which soon exhibited indications of rot and decay.

In the fore part of the season the excessive heat coming on stopped the secretion of nectar in the flowers almost entirely, and the bees resorted to decaying fruits for stores.

With the desiccating heat of July and August, peculiar spots of decay made their appearance on the surface of apples, pears, etc., which were soon covered with a slimy mold. When they fell to the ground, bursting their contents, the bees would collect in great numbers on this infected pomace, and carry the juice

containing the fungi to their hive.

This fruit juice in a short time commenced to ferment, and in the first stages of fermentation emitted a disagreeable odor.

When the honey commenced to ferment the bees began to act wildly and strangely, flying backward and forward, running in and out of the hives, apparently greatly confused. When about to die they would leave the hive, as the carbonic acid and miasm generated by the process of fermentation would render the confined atmosphere of the hive uncomfortable, and they soon left. Whole colonies would dwindle out of existence in less than two weeks. Colonies in this condition would pay no attention to their domestic affairs, allowing robbers to enter and despoil their home. Bees of all ages would crawl out on the alighting board and drop off, seeming to be listless, and with no definite end in view but to die. The queen seemed to be a failure, as the brood nest indicated.

From these observations and conclusions it is quite evident that the fermentation of fruit juice is the origin of this disease.

In proof of this assertion I will state that it is only the valley apiaries, and those situated in fruit growing districts, that are visited by this disease. The disease is unknown in apiaries situated high in the mountains.

Science teaches us that the various kinds of fermentation are due to living vegetable organisms of the lowest class of fungi, accompanied amid many times by animal organisms, or infusoria.

There is no certainty as to the origin of these fungi—whether they are produced spontaneously without the intervention of a mother plant, or from seeds or eggs—but, anyhow, under favorable conditions they are always developed.

The meteorological or atmospheric

influences are what causes the mildew, mold, etc. on fruit.

There are certain chemicals that will destroy the life of the vegetable and animal organisms. Heat will also accomplish their destruction.

In curing this California bee disease uncap all the honey and spray all the combs with a weak solution of salicylic acid. Three or four sprayings are all that is required. By that time generally all the spores of the fungi will be killed.

## DON'T "PUTTER."

A Few Colonies Consume Time.

FOR THE WESTERN APIARIAN.

There is a strong tendency in the beekeeper who has an apiary of only a few colonies, to indulge in what perhaps you will allow us to call "puttering;" that is, they take up as much time in tending them as would be ordinarily needed in caring for four or five times the number. System is needed in the small apiary as well as in the large one, if it is to be run without waste of time. "Time is money with every one; for all, if they will, can convert time into money.

If one man can care for 400 hives, and we think this is not beyond the possible, one colony ought not to be allowed to take up a much greater portion than one fourhundredth of his time; but many beekeepers with very few colonies, like "the hen with one chicken," make as much "to-do" over them as though they owned L. F. Mercer's mammoth and wonderfully systematic apiary.

Sometimes, it is true, the man may spend his time profitably in studying the bees, and occasionally strikes something of value that may be given to the world, but usually it fails to materialize.

Let us say again, don't "putter."



FROM THE AMERICAN GARDEN.

## THE WINTER FLORA OF CALIFORNIA.

### Beauty and Variety.

One familiar with the names of California native flowers, on looking over the catalogue of some great eastern flower firm, is surprised to notice how many beautiful flowers this state has given to the world. We have scores of the sweetest things yet left, which from the nature of things we must continue to enjoy to the exclusion of the rest of the rest of the world. I do not know of any way in which they could be grown, except as they are here in this climate.

I refer to our midwinter blooming plants and trees. These I suppose would be called alpine plants; at least they grow on our lower mountains. While trying to bring to bay, the past winter, certain mountain grey squirrels, jack rabbits, and the lively (California) valley quail, I noticed these things. It causes a lover of flowers to halt, and to forget that it is December or January, to these sweet, bright, and tender things, peeping up at you from the cold, wet ground, on a cold, raw day when a heavy top coat is a comfort. They do not care for cold rain or even snow. When the snow has crept down the mountain side, nearly down to the green valley below, these little beauties may be found a little further up, enjoying the scenery.

Stranger still are the trees and shrubs. Here is a fragrant laurel with its dark bright green varnished leaves, bursting freshly into bloom, its spicy fragrance, delighting its whole neighborhood; a rod away is another laurel of the same species, loaded with half grown nuts. Directly beyond is another, dropping its ripe nuts to the ground, to feed the squirrels and cunning mountain rats! The

same is true of the manzanita—here a bush loaded with its bright scarlet berries; the next bush is a mass of the sweetest flowers, too sweet for comfort, and if the day is bright, the swarm of bees around it shows that they appreciate it even if it is January. There is a scarlet flowering currant, a flame of bloom. Next is a gooseberry, bristling all over with sharp spines, and bearing modest drooping sweet bloom. —D. B. WIER, California.

I suppose all these hoops and covers are nice things to play with (May, 279). I have been growing all sorts of squashes, melons, cucumbers, etc., for the past thirty odd years, and have never found any use for such contrivances. The bugs attack my melons and squashes, I suppose, as badly as any one's else. When they are all gathered to the fruit I dust them over with a handful of fine bone-meal and bid them goodbye. If I have lost a hill of cucurbitaceæ by the beetles I have never found it out. So I get "tired" when I see a fellow fixing snowbird traps in a melon patch to head off beetles!—W. F. MASSEY, N. C. Experiment Station.

The protracted rains of last fall prevented the digging of potatoes in many parts of California, and this spring the fields are coming up strongly with a self-planted crop. The farmers are caring for these fields in the usual manner. California promises to compete sharply in a few years with the early potato crop of the Bermudas and the South.

### A Convenient HONEY-HOUSE.

FOR THE WESTERN APIARIAN.

By L. E. MERCER.

As I have seen nothing in your paper from this county for a long while, I begin to think

that beekeepers in this end of the state are not doing their duty by the new bee paper; or perhaps they have all been too busy taking care of the immense honey crop of 1890 to think of anything else. Well, the immense crop of 1890 has been cut right off in the middle by a hot wave that spread all over the state about the 6th. of June; so I think they will all have leisure now to write just a few lines at least to let us all know what the season and crop has been.

The season with me has been fairly good up to June 7th. Had it not been for the hot "spell" we would have had a good crop. And what we did get is the finest honey I ever saw, both comb and extracted. If the price is as good as the honey we will not complain of a short crop.

We have now at least 50,000 pounds of extracted honey and 11,000 pounds of comb honey; yet we think we have only one-half of a crop.

This season has been a very peculiar one. The weather during April and May was fine and the bees built up good and strong very early. The bulk of the swarming was done in April. We had about 150 swarms. We commenced to extract the 2d. of May, fifteen days earlier than ever before. In 1889 we did not extract until the 1st. of June.

Bees have been very cross and harder to handle than I ever knew them to be. During the third and fourth extractings it was impossible to work in the apiary with the best of Bingham smokers. We had to make a fire in the stove that I use for heating my soldering irons in, and by burning dry oak bark and manure we could drive the bees out of the apiary and have it all our own way.

But what I would like some one to tell me is: why were the bees not cross and hard to handle the fifth time that we extracted? This was just after the hot "spell" and the honey was coming in very slowly. This time we could work with but little smoke, not more than one or two puffs from the smoker for the worst hive in the apiary.

I believe I told you last year something about my wax extractor, so now I will tell you how our extracting house is arranged. To begin with the building is 12x16x7 feet in size, has a good pine floor, two screen doors, is boarded up and down and battened from the floor up. 4½ feet from there to the roof is a wide piece of wire screen that goes clear around



the building. This of course makes it always cool and pleasant to work in. We use a two-wheeled cart or wagon to bring the honey in; but as this cart is never taken inside the house, the tin-lined boxes are unloaded upon the end of a track that projects outside of the house. This track is about 18 inches wide and 10 feet long has a 2-inch roller about 6 inches from one end to the other. The end that is inside the house is about 4 inches lower than the one outside. So you see the boxes run in without help. Another set of rollers is used to run the empty boxes out on the out end being lower than the in.] The uncapping box stands between the two sets of rollers. It is a tin lined box 6 feet long, 2 feet deep, and 2 feet wide, with a drone board 2 feet 6 feet long, lapping over one side of the box just far enough to make the

box wide enough to hang the frames crosswise of the box if we wish to do so. But this drone board has racks or partitions just far enough apart to hang the frames on. After they are uncapped they of course hang lengthways of the box and are handy for the boy who runs the extractor. This capping box is connected with the same strains or settles as the extractor. The strains are under the floor or just level with the top of the floor and are always covered with a tight lid.

This rough sketch will give you an idea of the whole arrangement. Our extractor is a six-frame reversible, and the only perfect reversible extractor I ever saw. I will tell you in my next how it is arranged.

### Ancient and Modern Bee Culture.

FOR THE WESTERN APIARIAN.

By S. L. WATKINS.

#### CHAPTER V.

"So work the honey bees,  
Creatures that, by a rule in nature teach  
The art of order to a peopled  
kingdom."

Bees in their wild state are not very particular as to the place they select for their habitation. A hollow tree or other cavity suits their purpose well.

Man in far remote times conceived the idea of bees adapting themselves to circumstances, and supplied these industrious insects with abodes that they might be benefitted by their labors.

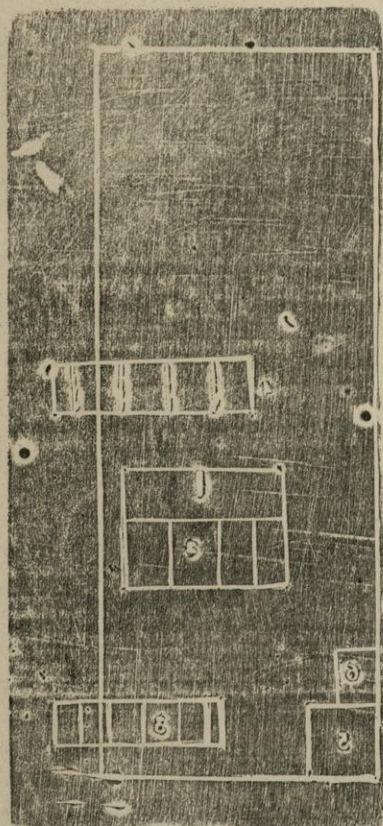
In ancient times it was the custom to kill the bees to obtain the honey

and wax; but in these modern times more enlightened methods prevail, and the lives of the industrious workers are saved.

The building of combs by the bees is quite an interesting study, and well worthy of a detailed description. If we have a new swarm of bees they are seen to depend from the top of the hive in a pear shaped mass, and apparently motionless. In a few hours scales of wax are seen to exude from between the rings of the abdomen. Presently numerous bees leave the central portion of the cluster, and make their way to the top of the hive, where they clear enough space to work in. They next take one of these scales of wax in their mandibles and begin to muree it with their tongues, and moisten it with a sort of frothy liquid. This process is to make the material glutenous; and it is then drawn out in a ribbon-shaped form and fastened to the frame. Numerous successors continue the work, each using the material that they elaborated, and then retiring and giving others their places, until in time, a little comb of wax is seen. Many bees work at the same comb at a time, with wonderful order and precision; and each appears to act independently of the other. The cells all have a direction not quite horizontal.

When the combs are first built they are of a snowy whiteness; then dull white in color, and in time turns to a yellow tint, which darkens with age. Newly made combs are quite brittle and they become more tenacious with age and will bend easier than they will break. This is no doubt owing to the propolis, with which the bees line the margins and angles of the cells, and the cocoons of the different generations of bees life added from season to season.

THE END.



Floor Plan.  
No. 1 Uncapping Box. No. 2 Drone board.  
No. 3 Track for empty boxes. No. 4 Track for full boxes. No. 5 Extractor. No. 6 Strainer.



## TO ONE BEGINNER.

FOR THE WESTERN APIARIAN.

By J. P. ISRAEL.

## CHAPTER II.

Now, don't go to inventing. It there is any thing I hate, it is for a beginner (as soon as he gets two or three hives) to go to inventing and teaching others (who know a thousand times more than he does) how to keep bees. Besides this, there is no use. If you *do* invent something, and it should prove valuable,—*it is old!* Mr. Heddon and I—that is, me and Jim—invented *that* just 92 years ago—or less. The debris of it is lying around in our back yards at the present time. You will only waste your time and money, for what Mr. Heddon and I—that is, me and Jim—have *not* invented, and experimented upon extensively, is not worth hunting for in a board pile! Any debris that is lying around loose, and the original of it cannot be found in our back yards—or in our extensive sheds and warehouses—is a forgery—"a delusion and a snare!" It is a mean and sneaking attempt to palm off upon the public a debris that is not genuine! Mr. Heddon and I—that is, me and Jim—have and hold the only true and original debris: anything in the law or the constitution to the contrary, notwithstanding.

Prof. A. J. Cook gives you in his "Manual" the whole anatomy of the bee. He tells you how its "honey sucker" is made, and how the bee itself is a mere shell, and has no bones. In fact, according to him—and he is a good authority—it is on a dead level with boned turkey. He also tells you that its sting is composed of a sheath and two very fine saw swords, working within it alternately with lightning-like rapidity!

But it falls to me to explain to you the deeper mysteries within and beyond. These swords and sheath are worked by a double back-action force pump! It is none of your 2-40 horses either. Its stroke is faster than the flying bullet—quicker than the flash that lights up the midnight sky! But for all that, I think it is nothing more than an infringement upon the Douglas patent for his double back-action force pump! If Douglas should ever carry the case into the U. S. courts he would be sure to win it!

When a bee sits down, he stands on his head. You can see this fact verified, on any of their idle days, at the mouth of the hive. This fact proves my position to be true—that a bee's brains, his phrenological developments, his intellectual force and power, all of them, are located and reside in and around the base of the tail! To a beginner, this is an astounding proposition. But it is true, nevertheless. Mr. Heddon and I—that is, me and Jim—were the original inventors and proclaimers of this fact, and the debris of it can be found packed away in our warehouse No. 7. But I will prove it again, for the benefit of my beginner. Now watch me, and see how mighty and all-powerful genius can lay you low! The bee is sleepless, watchful, persistent, relentless, threatening as a thunder-storm, quicker than the lurid flash that shivers the oak and lays it low, penetrating as a two-edged sword, and sends it home into man's internal furniture, in such a vigorous and thrilling manner as to make him howl! The phrenological developments of the bee lie around the base of the tail. To prove this, take the head under your left arm—holding it tightly while you hold the body—upside down—with your left forefinger and thumb. Now with your right forefinger and thumb, feel around the base of the tail. The bumps will be more apparent, if you squeeze the head under your arm a little tighter.

It is Jim's end of the bee and I don't care how much you squeeze it. *Combativeness* occupies the extreme end of the bee—that is, its tail end. Squeeze the head under your arm a little tighter, and you will be able to find the bump easier, and quicker, too! It is large and protuberant and cannot be mistaken—if you feel for it diligently. He has no caution and not a vestige of fear or cowardice. He would attack a million of men—armed with Spencer rifles! *The love of home* lies next to combativeness; but the bump is broken right into two pieces! It is very large—that is, the part that is left there. This is the reason that the mother and the older sisters and brothers kick up a row in the family, and leave the old homestead forever! This they do in the very busiest time in the year, and leave the youngsters to do all the hard work and provide for winter. They would do this if coal was forty dollars a bushel and wood fifty dollars a cord! There are many bumps that you will not find at all. He has no idealism, no conscientiousness, no reverence for age, sex, or dignity. He will attack king or President as soon as he will a beggar! Constructiveness also lies beside combativeness,—on the other side—and is very large. It enables the bee to lay out and build his wonderful and beautiful home. He is an expert and scientific architect—although he has studied in no school and has stood no examination! He understands a great deal about mathematics, too, as his building well proves; but he can't count beyond eleven! This has been frequently proved by Mr. Heddon and I—that is, me and Jim—and the debris is lying around in warehouse No. 1, or packed away in No. 13. Next comes the bump of acquisitiveness. This organ is so large that it makes the best of them—even those that try hard to preserve their moral character—thieves and robbers! It is so large and dominates their nature so much that it takes away their senses—actually makes idiots out of them! They will dash into the run-



ning honey—although they see hundreds going down to death before them—and be drowned; or into the boiling wax, and be burned to death. Next comes industry. I need not say that it is very largely developed. This, with acquisitiveness—the desire to gain, to have and to hold more—drives him on to his work, from the gray of dawn until the shadows fall around him, and the coming night drives him home. He is the only creature in all God's wide creation that actually kills himself working. If the human family would work as hard and as faithfully as the bee in his busy season the whole race would be extinct in three years! His life is naturally about a year, but in his busy season it is shortened down to six weeks or two months. Towards the end of this time he feels his advancing age. When he looks in the glass he sees that his 'honey sucker' has become wrinkled—his eyebrows and whiskers have turned gray. His wings have become shivered into ribbands—yet he can fly! Why should he not go out? Alas! it is his last trip! Far away over mountain and plain he flies, to gather the sweets of the flowers. He loads himself up heavily and starts for home, as gayly as ever. But he goes not far before he discovers that his wings will not bear him up—that he is falling to the ground. If he would disgorge his load he could reach home, and die upon his mother's bosom! He could be buried in the family vault with all the honors of war! But here his acquisitiveness comes in again, and makes an idiot of him! He will *not* disgorge his load—at any price—not if you would offer him \$200,000 for it, when honey is only worth ten cents a pound! And so it costs him his life!

Far away on the distant plain  
In the tangled grass he lies.  
Never will he disgorge his gain—  
And the faithful worker dies!


Let him take his rest on the spot he fell,  
In the midst of the flow'r y plain,

And his friends shall bid him a last farewell,  
When they visit the place again.

Now you may think that it took about six weeks to compose these beautiful and flowing verses. It would take any other poet about that time to do it,—and then they would not be half as good. But Mr. Heddon and I—that is, me and Jim—ground our stupendous minds on a brand new grindstone—warranted not to cut in the eye—and we hatched out these magnificent verses in about three minutes! If anybody doubts it, the debris can be found stocked away in our warehouse No. 17.

The bump of music is not large in the bee, and so we find that its music book contains only about four or five tunes. They are all sweet and very beautiful except one. That *one* is the "*note of warning!*" That is what it is called in the book, for I read it there myself. This tune he strikes up *after he has struck you!* Firmness, or in other words, stubbornness, is very largely developed in the bee. If a mule had this bump as largely developed—according to his size—the lump on the top of his head would be three miles high! The weight of it would sink the mule 37½ feet into the solid ground! But you see it has no effect upon the bee. He swings along in the air as freely and gayly as if he had no stubbornness at all! And yet he is so stubborn and so persevering in it, that even if you could convince him that he is wrong, he would "fight it out on that line if it takes him all summer." He has another bump that I have not been able, in my extensive search and experimenting, to find in any other insect or animal, except, to a small extent, in man. This I call the *tantalising* bump. It is very large, and lies next to firmness. He may get after you in the apiary—on the road—anywhere. It is all the same to him,

he follows you wherever you go—singing around your head as if he thought you were too sweet to be lost. You run for a place of safety, and find him there ahead of you! At last you get mad—drop everything and get your hands ready to kill him. Before you got your hands free he was sailing leisurely before your face. Now he is at the back of your head—now at your ear! You turn round quick to get a shot at him—he is gone! Now he is behind you again—with an occasional dash in front. You make two or three attempts to kill him—it is all in vain. You turn quickly to get a smack at him—but he is always on the other side! At last "he" gets mad, too, and dashing into your face, gives you a double "left-tailer" right on the end of the nose! A thousand darts have dashed into your face—your boots are full of 2 ounce tacks! Great Jerusalem! how you howl! Don't awake the dead! You will be over it in a week! The bee has no bump of destructiveness—not a vestige of it. Everything he touches he puts to some valuable use. He wastes nothing at all. If the human family could, and would imitate him in this particular, we would all be rich, and able to drive our four-horse mule teams, every day!

 TO BE CONTINUED.

As a good, hardy substitute for the European box, (*Buxus sempervirens*), James Fletcher, F. L. S., of Canada, recommends *Pachytima myrsinites*, a small box-like shrub, found in the mountains of British Columbia, with slender twigs, and a profusion of shining leaves.

The President of the Ontario Fruit Growers' Association, finds sulphur, applied freely twice during the season to the soil beneath his grape vines, a perfect protection against mildew and thrips.



# Agricultural.

## THE CODLIN MOTH.

What Shall We Do With It?

By WILSON WALLACE.

This is the age of scientific investigation, and insect pests; and among the latter list, perhaps there is nothing more to be dreaded than the Codlin moth.

When we go out in one of the many apple orchards that are found in the foot hills of the mountains and see the ground covered with immature fruit, the result of the depredations of the Codlin moth, we are forced to pause and ask the question — where will this thing end? will it be in the destruction of the trees, or, can we find some method of exterminating the moth?

Spraying has been resorted to with very indifferent success, and a number of other methods tried with the same result, and unless some more effective means can be found, we may prepare ourselves to say good bye to the apples, and thereby lose a large annual revenue, as well as the capital invested as the depreciation in the value of the land that was formerly noted for its apple product, will be a serious matter to the owners.

The moth of the apple worm (*carpocapsa pomonella*) may be known by a large, oval, brown spot, edged with copper on the hinder margin of the fore wings. They lay their eggs at different times in different localities, in the cool of the evening, dropping them one by one in the hollow at the hollow at the blossom end of the fruit. The larvae are hatched in a few days, and at once burrow towards the center, only one being commonly found in each fruit. By the time it has reached its full size it has burrowed in various directions, getting rid of

the refuse fragments by a hole it gnaws in the side, through which it escapes after the premature fall of the fruit. They make silken cocoons, and are not generally turned to moths until the following summer.

And now the question: what are we going to do with them? The scientist tells us how they are made, and their manner of eating, etc.; but this is a good deal like explaining to a condemned man the particulars of being hanged.

I will give my ideas of a remedy which I think if unitedly carried out would prove successful.

In the first place spraying is of great help in destroying them, and the main difficulty that it is not considered more efficacious is that the orchardist does not do sufficient of it. We must remember that the larvae requires but a short time to hatch, and although by one spraying we may kill all the eggs, the tree soon outgrows the poison and the result is that another batch of eggs are laid and matured without hindrance; while if we continued to spray during their hatching season we would gradually overcome them.

Another practice of even greater importance is to destroy all the the apples as soon as they fall; and this is the most difficult part of the undertaking, as they must be picked up at least once a day, or otherwise the grub will escape into the ground, and arm on schedule time for the next year's depredations.

The question is one of grave importance, and the man who suggests some more practicable scheme will confer a boon on the fruit growers of California.

There is a peculiarity in farm labor in California that seems to be very objectionable, and that acts strongly to keep many who have not sufficient capital to farm for themselves, and yet are, or would make the best possible help the rancher could have, out in the field.

We refer to the custom of the ranch-

er of California, requiring his help to furnish blankets, and sleep in some old shed or other and in all possible ways be kept from contact or association with the family. The farm laborer, in many instances, is entirely debarred from everything that has the least appearance of home comfort, and feels that he is placed upon the same level as the many members of the tramp fraternity who are frequently employed for short periods and placed with him in field and board and bunk. His self-respect is lessened; his interest in the work weakened; his sensibilities made callous by many affronts: he is compelled by circumstances to seek companionship and recreation among the base and in consequence is debased. We personally know this system to be productive of a multitude of tramps. We do not mean to say all ranchers use their help in this way, but the conviction forces itself upon the careful observer that the majority do so. Brother farmers, the only way to have good, reliable hands for farm work is to employ only good, reliable men who want to work, and then make them feel that you have an interest in them. Raise them nearer to your own social level and surround them with the civilizing influences of home comforts, and they will in most cases repay you amply by more efficient, pleasant, reliable, and profitable service.

See that your milk cows get plenty of fresh water to drink. There is nothing more injurious to a dairy than a scarcity of pure water.

Do not expect to make good butter if there is a foul odor of any description in the vicinity of your milk house. There is nothing that will take a flavor as quickly as butter.

I know an instance where a thousand pounds of butter was completely ruined by a skunk getting into the storage cellar.





ECHO CANYON, UTAH.

The above illustration represents Echo Canyon, Utah, and is among the most noted of the many marvelous scenes of the rocky mountains.

Utah is coming rapidly forward to take its place among the great honey producing sections of the west, and before many years we may reasonably expect great things from her.

Some very practical men of large experience in the bee business have located within the borders of the ter-

ritory and their success will without doubt induce others to enter the field.

Among the most advanced beekeepers we may mention John C. Swaner, Editor of the "Intermountain Horticulturist" who can be safely entrusted with the care of the bee interests of his region.

All through the mountain regions there are magnificent locations for apiaries. Alfalfa is being introduced extensively where there is water for

irrigating, and alfalfa means honey with us.

It is both delightful and healthful to live in the mountains and it is a source of wonder that so many crowd into our large cities and endure the worry attendant upon so precarious a means of existence as is at their command there, when they might have a delightful home with abundance amid the beauty and grandeur of the mountains of the west.



Among the many resources of the foothills, I doubt if there is any more worthy the consideration of the rancher than the cultivation of small fruits. It is an exceptional case that a rancher does not have a number of valleys or glens that are well adapted to the production of small fruits, especially the blackberry; and it is truly astonishing the vast amount of this particular fruit that can be grown on a small space.

When we advocate this particular industry to the rancher we are generally met with the reply of "too far from market," or, "no market for them." This is particularly true at the present time with the fruit placed upon the market, in its fresh-picked state. Nevertheless, there is no reason whatever why they should not be cured, and shipped to any desired point.

Strawberries in the foothills this season have acted in a very eccentric manner; for instead of continuing for three months, as they naturally do, they ripened all at once and only lasted about ten days.

## Home Circle.

### THE HERMIT OF THE FOOT-HILLS.

FOUNDED ON FACT.

FOR THE WESTERN APIARIAN.

By CHARLES E. UPTON.

#### CHAPTER IV.

I saw that I would not be likely to prove a welcome intruder; so I moved back, as far as possible, out of the direct light of the fire, resolving to remain quiet and let events shape themselves. The eyes of the old man at length assumed a more gentle ex-

pression, and, strange to say, his first act was one of hospitality. Rising, without a word, he walked to one side of the cell, and stooping, loosened a stone from the apparently solid wall, disclosing a small, rock-bound cavity. From this he took a loaf of coarse bread, an old tin plate upon which lay a large piece of roasted deer's flesh, a couple of rusty steel knives and forks, and two more plates of a much smaller size. Placing the whole upon the ground in the middle of the apartment, he turned his attention toward me, and advancing, with a low bow that would have done credit to the most accomplished Parisian, and with an enunciation which, though distinct and perfectly intelligible to my American ears, betrayed his foreign nationality, bade me welcome.

"Good evening, monsieur," he said with the grace of a courtier. "Would you be pleased to partake of my repast?"

Struggling with a feeling half way between reverence of and amusement at the formality of the speaker, I answered, in as near an imitation as I could command:

"Thanks. With the greatest pleasure, monsieur."

At that he stepped backward several paces, requesting me to follow and be seated; then, having, with true politeness, made his guest comfortable before thinking of himself, took a seat beside me.

We ate in silence for a few moments, until, having somewhat allayed my hunger, I complimented my host on his skillful cookery under such disadvantageous circumstances, and expressed surprise at the quality of the bread, which was as good as any I had tasted. In answer he informed me that he owned a small piece of fertile soil near by where he yearly planted small crops of vegetables and grain. The wheat he ground into flour by rubbing it briskly between two heavy stones: a slow operation, truly, but, nevertheless, a most effective one. What he used to make the bread so light he did not say, and I did not press the question. As for

meat, having a good rifle, and there being an abundance of game in the vicinity, he did not suffer.

Having finished our repast, the remaining victuals were restored to their former place of safety, and we moved closer to the fire, there to talk on such subjects as were of the greatest interest to us both. I found the old man to be a fluent conversationalist and evidently a person of fine education. After giving him a short summary, as far as I could remember, of the principal events in the world since his seclusion, I inquired the cause of so intelligent a personage as himself being isolated from all communication with his kind.

"I am a native of Paris, France," said my host, "and was born in that city on the 16th day of June, 1810. My father was a poor shoemaker, and struggled hard to supply the numerous wants of a large family—I being the eldest of seven, five boys and two girls.

"My brothers and sisters received a common school education; but I, as the oldest, and besides having a natural aptitude for learning, was given the best instruction that the country afforded. At college I became acquainted by accident with several of the most lawless and disreputable students, and, as a matter of course, soon began to follow in their footsteps.

We gave, contrary to all rules of the institution, midnight suppers in our dormitories, drank, smoked, gambled—in fact, dissipated in every possible manner. The rooms of the more respectable students, who had refused to join us, were visited, everything thrown into disorder, windows broken, and the sleeping occupants deluged with water. Matters continued thus for some months, but at last a crisis came. One night, in the midst of an unusually noisy frolic, the door of the room suddenly opened, and two or three of the assistant professors glided in amongst us. Instantly all was confusion, and we looked about in dismay for some chance of escape. We were ordered to return to our rooms and obeyed without question



But the next morning, after roll-call, we were summoned before the school president, our own testimony and that of the witnesses heard with equal attention, and the sentence given. 'Young gentlemen,' he said, 'you have been guilty of breaking one of our most sacred laws. However, seeing that this is the first time the faculty has known of your proceedings, I shall allow you to go unpunished; but should the same occur again, you shall be permanently expelled from the school, regardless of rank or family connections.' So saying, he dismissed us, and you may be sure we went our ways with lighter hearts.

"For a few months all was well. We attended strictly to our lessons, held no more midnight parties, kept early hours, and were rapidly rising in the estimation of our teachers. But alas! our good behavior was of short duration. The habits of two long years could not be shaken off in a moment without leaving their bad influence behind. The feeling of disobedience and lawlessness again took possession of us. Duty, honor, everything that our better natures counselled us to guard, were alike forgotten; all was lost in a giddy whirlpool of folly and dissipation. The hours of our college course drew to a close; graduation day was approaching; and we found ourselves but ill-prepared to stand the test. Then, when it was too late to make amends, did we begin to regret the actions of our past life. What would we not have given to have brought back even a fraction of those miss-spent years? But vain were our lamentations. The past was gone and could not be recalled. We could only do our best at the present, in readiness for the future struggle. With that view in mind, we again turned aside from the path of ruin, and put forth all our energies

to meet the approaching contest. The time came; we filled our examination papers and handed them to the judges. Then followed a period of suspense. However, it was soon over. The papers came back to us, marked with the percentage of standing. My classmates and fellow culprits, as I learned later, failed miserably, and were left in disgrace to continue for another term in a lower grade; but I, by some miracle, passed, and was dismissed—yet it was a mere piece of luck, for my papers were marked only one per cent above the required rate.

"So unusual was such a failure that the president felt it his duty to make special mention of it. 'My young friends,' he said, 'the days of your school-life are over, and you are about to enter the world to battle for yourselves. Pausing, as you are, on the threshold of life, you naturally look back over your schoolboy days, at their triumphs and downfalls, their failures and successes. What, then, would be the retrospect brought before those who have failed in the path of duty? Not a pleasant one, truly. I do not wish to cast reflections upon the characters of the young gentlemen of the senior class. The most of them have been sufficiently punished by disgrace, while the last has had so great a difficulty in retaining his reputation that he will have no difficulty in remembering the event. This illustration teaches its own lesson. Whenever you are tempted, in after life, to return to your old habits, think of the inevitable result, and halt before you are too late. I have said enough, I think, to make you understand my meaning. That is all. You are dismissed.' Such was the last day of my school-life, the beginning of a new chapter in my history. But I have never forgotten the president's last words. Old as I am, they still seem fresh in my memory, reminding me of the turning-point of


my whole career."

The old man stopped, and for an instant seemed lost amid the visions of former years. The dancing gleams from the changing firelight illumined the white-crowned head, and showed the working features of the venerable Parisian, and the eyes that had in them a far-away look, as if gazing through the mist of countless ages, at visions of another century. But the dream fled, the eyes began to lose their abstracted appearance, forsaking the dust of the past for the realities of the present.

"At first," resumed the old man, "I could not content myself with the sudden change of the school-boy into the man of the world. I obtained a situation of teacher in an intermediate department of a boys' boarding school, at a salary which, in your money, would be about fifty dollars a month. As the pupils under my care required instruction only in the common branches, I had little difficulty in filling the place, and my superiors declared themselves satisfied.

"Time went on. I was promoted, given a salary of one hundred dollars per month. I married, and moved to a neat little cottage near the suburbs of the city. The years sped; I became principal of the academy, and was happy in my home life. But my lot was not destined to be one of uninterrupted harmony. In 1849, there flashed across the ocean a telegram telling that James W. Marshall, an American employed at Sutter's Mill, in Coloma, El Dorado county, California, had discovered pieces of gold in a flume connected with the mill. People from all nations left their homes for the new 'El Dorado.' I caught the fever, forsook home and occupation, and, in company with my wife and little daughter, embarked on a ship that was fitting out at Havre for the—"

The speaker paused; just then, echoing through the air without, came a cry that made us quake with a sensation not unlike fear, and cut short all power of utterance.

 TO BE CONTINUED.



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1st. How many colonies of bees have you? .....

2nd. What kind of bees are they? .....

3rd. In what kind of hives? .....

4th. Do you run for comb, or extracted honey? .....

5th. From what plant does your honey chiefly come? .....

6th. What do you consider the average length of your season? .....

7th. What is your largest yield from any one colony? (a) Comb, .....

[b] Extracted, .....

8th. What is your largest increase from any one colony? .....

9th. What is your increase for the season? .....

10th. The average crop being 100, what would you place this crop at? .....

11th. What is your average price for honey? [a] Comb, .....

[b] Extracted, .....

12th. Do you allow natural swarming, or do you divide? .....

Any other information .....





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