

A DAY IN AN INDIGO FACTORY.

Starting from Lahore on August 1, 1886, I rode the bicycle southward to Calcutta, over about fourteen hundred miles of what seems to me to be the finest and most interesting highway in the world. My experiences were many and varied.

When I got well down into the Ganges Valley, toward Benares, among the swarms of natives who are always streaming along the road, I began to see men and boys who were stained a deep blue color from head to foot. Sometimes in the evening I met big gangs of these blue people as they trudged along, evidently on the way to their homes for the night. The only clothing they wore were breech-cloths and turbans, which were as blue as their bodies.

On the whitish surface of the broad, straight Indian road I could see objects for a long distance. In the slanting beams of the evening sun I could look ahead and single out these blue-bodied people from among the dusky throngs a mile away. I could see the sunlight glisten on their shiny, azure skins as it might on blue china images, and it presented a very curious effect.

At first I wondered what these men were, but it soon occurred to me that I had reached the Benares district in the very height of the indigo season. I often passed creaking bullock-garries carrying heavy loads of the indigo plant to the factories. Sometimes, in a stretch of country which was open and intersected with roads, I could see these stacks of dark green indigo plant slowly creeping from all directions to one point.

At length, one morning, I arrived at a great indigo factory situated near the road. Not far from the factory was the commodious bungalow of the planter, an English gentleman, Mr. T—, who had had many years' experience as an indigo planter. As I dismounted, Mr. T— came out, and promptly invited me to remain with him as long as I saw fit. The heat was something terrific, and, as I was curious to see something of indigo-making, I readily accepted his hospitality for the day.

From the factory, two hundred yards away, there came such a babel of shouts and yells, seemingly from a hundred human throats, that I stood and listened for a moment before following my host to the bungalow.

Upon visiting the factory, I saw at once how my "blue people" of the road came by their coloring. We first visited the beating-vats, which were square tanks about eight feet deep and twenty feet square. Several of these vats were ranged side by side, or rather one long vat was divided into several by walls, which were also foot-walks. Out of these vats came the pandemonium of howling and shouting that had arrested my attention at the bungalow. In each vat about twenty naked natives stood waist-deep in liquid indigo.

"These are the beaters," said Mr. T— "A rather wild-looking lot, aren't they?"

I fully agreed with him that they were wild-looking. The beaters in each vat were ranged in two rows, which faced each other. Each man was armed with a long-handled wooden spade. With marvellous dexterity and rhythmic accord, both rows of beaters were flinging into the air streams of indigo, which dashed together overhead, and splashed about the vat and over the beaters in showers of foam and spray. The beaters incited one another to extra exertions, sometimes by a shrill chorus, and again by frantic yells. Every man was as blue as a statue of indigo, and was covered with foam and splashings. The several vats were filled with these blue figures, who flung the liquid indigo high in air; the weird choruses shouted in shrill cadences; the flying froth, which settled on the laborers' heads and streamed down their glistening skins, made a scene totally different from anything I had seen elsewhere.

As we stood and looked on, Mr. T— explained to me the various operations, and the part that each played in the production of the indigo of commerce. The flinging and dashing of the liquid about in the air brings about a chemical transformation. The fluid, as it comes from the stalks and leaves of the plant is of a greenish color. The wild work of the beaters changes the tint into a beautiful deep blue by oxygenation.

At the same time that it changes in color, the dye stuff held in solution granu-

lates and settles to the bottom of the vats. When the beaters have thoroughly performed their work, they climb out of the vat and allow the contents to settle.

Mr. T— led the way to the farther end of the row of beating-vats and showed me one of them which had been settling for an hour.

"Here, you see," he said, "now it is settled, the liquor has changed color again from blue to a smoky green. Except that it is somewhat clearer, it looks about as it did before the beaters began to work on it."

The foreman now came and removed a plug from a hole in the wall. The green liquid gradually ran to waste, and there was revealed at the bottom of the vat a thick, pulpy sediment of blue. This was the indigo. Men now came with earthenware jars, which they filled and carried off to the boiling-room. Here the indigo was strained through wire sieves of fine mesh to remove all impurities.

After it has been strained, the soft blue mass is poured into big iron kettles and boiled for two or three hours, to evaporate the moisture and further granulate the indigo. It is then dumped into presses and subjected to heavy pressure by means of lever and screw.

The presses are square iron boxes, perforated like a colander and lined with press-cloths. By this process all the remaining water is forced out than can be removed by pressure. The indigo is turned out of the presses in dark blue cakes, which are of about the consistency of a bar of soap. Then it is cut up into commercial squares

and the mass is pressed or weighted down. Water is then pumped in with a Persian wheel, and the plants are allowed to steep.

Fermentation soon commences, and in a few hours the vats are bubbling and seething to the rim. This continues for twelve or fourteen hours, when the fermentation gradually subsides. The water is then run off into the beating-vats, to be manipulated in the manner I have described.

Of late years many improvements have been introduced into the manufacture of indigo. Much of the beating is now done by machinery, which does the work more thoroughly than it can be done by men. A special kind of yeast-powder is used to stimulate and increase the fermentation, and another preparation aids in the precipitation of the indigo after beating.—*Thomas Stephens, in Youth's Companion.*

EARTH-WORMS.

In wandering through the fields in the early morning we often see little heaps of newly disturbed earth, and occasionally catch glimpses of reddish or pink bodies quickly withdrawing into little tunnels in the sod. These are the earth-worms, considered the humblest of all animals; yet, as insignificant as they seem, they are among the most valuable aids to the agriculturist. We may appreciate this by selecting a field at random in a good producing country, making a section down through the earth of several feet, when, if carefully done, we shall find innumerable tunnels formed by the worms, leading

states that the vegetable mold thus transported in some places amounts to ten tons an acre. Think of it! If your ten acre farm is one of these farmed localities, these silent workers, say to a number of a million, have ploughed up about one hundred tons of earth for you, giving you a fine top-dressing.

The worms not only carry all this material to the surface, but they drag vast quantities of leaves and other matter down that serve to enrich the soil and render it capable of producing larger crops. The earth-worms of Australia attain a large size, sometimes several feet in length, and have been seen climbing trees. Some casts found in India are a foot in length. The worms evidently live in complete darkness; but it is known that at certain times and under certain conditions they are luminous, so that a state of things may exist underground of which we have no conception, and the tunnels of these little creatures may be brightly illuminated.—*Living Light.*

SILENCING A SLEEPER.

It was on a Pennsylvania Railway train, coming north from the city of Washington.

All the passengers but two in the sleeper had dozed off. The exceptions were a young man and a baby.

The former was willing to follow the example of the majority, but the latter objected in a loud voice. Its cries awoke the other passengers, and some pretty strong language was heard.

The young man got out of his berth and carried the baby up and down the car, trying to soothe it. But the baby was fretful, and its voice would not be stilled.

Finally a grey-headed man, who was evidently an old traveller, stuck his head out from behind the curtains and called to the young man in a sharp voice:

"See here, sir, why don't you take that child to its mother. She will be able to manage it much better than you. It evidently wants its mother."

"Yes, that's it," echoed other irritated passengers.

The young man continued to pace up and down for a moment, then said in a quiet, strained voice:

"Its mother is in the baggage car."

There was an instantaneous hush. The gray-headed man stuck his head out into the aisle. "Let me take it a while," he said, softly; "perhaps I can quiet it."—*New York Sun.*

COMFORT FOR YOUNG POETS.

Dr. T. M. Coan gives a piece of advice to young writers which may be of service to some of them. He says: "Write poetry! You cannot write too much, if only you will spare your friends. Discipline yourself, but do not ask any one to read or to publish the verse you write.

"Verse-making is the best possible practice for writing prose; it trains you in the careful choice of words; it forces upon your consciousness a host of synonyms that you might never stop to find when you are ambling along in prose; it makes you think of clear expression, of melody, of liveliness, of conciseness—of every quality, indeed, that prose as well as poetry demands. Verse-writing, in a word, is the best possible tonic for the indolent writer of prose; for one cannot write even tolerable verse without taking pains."

To this may be added the well-known fact that almost all the noted writers of prose have actually written poetry, and many of them much poetry. John Quincy Adams, Horace Greeley, James Gordon Bennett, Doctor Franklin, Macaulay, Thackeray, Dickens, Abraham Lincoln, Napoleon Bonaparte and Frederick II. of Prussia all wrote more or less verse, though absorbed most of their lives in pursuits far removed from poetry.

There is a volume of interesting poetry filled with the productions of poets who published but one known poem. King Frederick, on the contrary, wrote and printed enough poetry to fill three octavo volumes. Verse-making was his habitual solace in time of trouble.

TRUE MERIT is like a river—the deeper it is the less noise it makes.

THERE IS NO RELIGION without worship, and there is no worship without the Sabbath.



INDIGO-BEATERS AT WORK.

and impressed with the stamp of the factory.

The cakes are then removed to the drying-house, a large, airy shed, provided with tiers of open shelves. Here they remain for two or three months, until they are thoroughly dry, and are then packed in boxes, and shipped to market. The chief Indianemporium for indigo is Calcutta, whence it is shipped to foreign markets.

"Now come this way," said Mr. T—, after we had visited the boiling and the drying-houses. "I want to show you something interesting."

Saying this, the indigo-planter led the way to a set of vats similar to those we had already seen, but elevated so that the liquor could be drained from them into the beating-vats.

"These," he said, "are the fermenting-vats. Now see!"

Here Mr. T— produced a match from his pocket, and lighting a stalk of dead indigo plant, he cast it, flaming, into one of the vats. The gases that were escaping from the fermenting mass of leaves and stalks ignited with a sharp report, and for an instant a bluish flame spread all over the vat. The experiment was repeated at the next vat with similar results.

In these fermenting-vats the indigo-plants are packed tightly in layers, as they arrive in the bullock-garries from the farms. Porous frames are laid on top,

here, there, and everywhere. In fact the upper crust of the earth is in an endless maze of streets, lanes and avenues. A naturalist has even attempted to calculate the numbers of these little workers, and has come to the conclusion that they average one hundred thousand to the acre; and in especially rich ground in New Zealand it was estimated that there were three hundred and forty-eight thousand four hundred and eighty in a single acre. This vast body of worms is continually at work boring this way and that, coming to the surface during the night and retreating to greater depths during the day; and it is at once evident that their tunnels constitute a system of irrigation and ventilation for the upper crust. In other words rain, instead of running off, enters the holes, and so penetrates the earth, thus being held for a longer time. Air also finds its way below the surface, so that the homes of the little creatures constitute storehouses for moisture.

But this is a very small part of the work accomplished. The worms are in league with the farmer, are in fact his unappreciated assistants, upon whose endeavors depend much of the success of his crops. They are continually swallowing the earth and depositing it at the surface, and working it over and over. If I should ask my young readers to estimate the quantity of earth brought to the surface in a single acre in a year, I fear they would not place the amount as high as Mr. Darwin, who