

I discovered, when I arrived on board, that as they were going in for mutual improvement, they had agreed to start a sort of competition—that is to say, they were to see who could take the best picture of a given subject; and as they happened to be moored near Hampton Court, the Palace was first chosen as being an easy thing to commence upon.

The dark room, being necessarily of limited size, one person only could enter at a time. It was built out of string and brown paper, and looked about as big as a sentry box. They accordingly tossed for precedence; and Jones, winning the toss, entered and proceeded to put a plate in the dark slide.

Jones comes out looking rather hot and excited after being absent quite a quarter of an hour.

"Beastly nuisance. Plate just the least bit too big for the slide. I've forced it in, but goodness knows how I'm to get it out."

"I told you so," remarks Brown, complacently; "you would buy the cheapest apparatus you could find, and it serves you right."

Jones does not reply, but goes outside, where he finds the entire available portion of the house-boat deck occupied by Bagshaw's universal camera, the legs of which are of abnormal length.

"You'll have to move this, Bagshaw, you know."

"Can't you put your little quarter-plate camera in between the legs of mine?" asks Bagshaw from beneath the focussing cloth.

"Quite impossible. Don't I want to move about so as to get the best view?"

"But this camera of mine is so confoundedly heavy."

"Well, you shouldn't have bought such a clumsy affair. It's not fitted for out-door work at all. Why, it hasn't got a bellows body, even."

Bagshaw points out that it's all right when once it is fixed, and that was why he thought he would utilise the time while Jones was in the dark room. However, as Jones positively declares that he can do nothing unless it is removed, he does remove it under protest and with much labour.

Jones now commences to select his point of view, which he does by planting his camera at intervals all over the very small deck of the house-boat. Apparently he is not satisfied, for he glances at the roof, but evidently "funks" the conspicuous position. As it is, he has been insulted by an offer of sixpence from a river 'Arry, who wants him to take a "photo" for this paltry sum. However, he finds it necessary to make up his mind, as Brown, Smith, and Bagshaw are anxious to have their turn, and are urging him to "look sharp."

He focusses and prepares to make the exposure. As he is about to do so, two pretty girls in ravishing boating costume approach. The temptation to pose as a past-master of the art is irresistible. He throws the weight of his body on one leg, places his left hand at his hip, with his right seizes the cap, snatches it off, gives it a graceful flourish in the air, and replaces it. It is very much as if he had said, "Ladies and gentlemen, there is no deception; I have nothing up my sleeve, I have no confederates. This is how it is done."

"You'll have hard work to beat the view I've got," he remarks triumphantly, as he passes Brown, Smith, and Bagshaw, on his way to the dark-room.

He disappears, and Brown, Smith, and Bagshaw, wait patiently for the result. He is away five, ten, fifteen, twenty minutes; and Bagshaw, who has next turn, raps impatiently at the door of the dark-room.

"Can't come out just yet," Bagshaw hears a stifled voice reply. "This is a slow plate."

"A slow plate," retorts Bagshaw; "I thought you used only rapid instantaneous ones."

"I mean one that is slow in developing. Do go away, please. You only bother and confuse me; I'll open the door as soon as ever I see the detail well out."

Five-and-twenty, thirty, thirty-five minutes pass, and Jones is still secreted in the dark-room. Brown, Smith, and Bagshaw are debating the propriety of bursting open the door.

"We made a great mistake," Bagshaw declares; "each of us ought to have put our plates in the slides first of all. As it is, we have to wait until Jones chooses to finish developing."

"He's been an hour all but five minutes over it," says Brown, consulting his watch. "I never heard of a plate taking so long."

Just as they begin to think Jones has been asphyxiated by ammonia fumes, the door opens, and he comes out. He has a very dissatisfied look on his face, and apparently no picture on the glass he holds in his hand.

"I can't make it out," he says; "I gave plenty of exposure, yet there isn't a ghost of an image. It must be the fault of the plate. I told you Biddlecombe's plates were no good."

Up to the present I have held aloof from the discussion, but I now venture to put in a word.

"Excuse me, Jones," I say apologetically, "but I do not think the plate is in fault. I was watching you the whole time, and in your anxiety to strike an effective pose for the admiration of the two young ladies, you forgot to draw out the shutter."

(To be continued.)

THEORY AND PRACTICE OF PHOTOMICROGRAPHY.

BY MAURICE N. MILLER, M.D.*

Now we may place our object upon the microscope stage. The heliostat has been steadily following the sun, and our light requires no adjustment save an occasional touch of the secondary mirror. The light passes through our first cell, and the water absorbs the heat and renders it safe to our valuable objects and objectives. Remove the eye-piece, and, bringing the camera-frame into position, proceed to make your adjustments. We find that, standing by the microscope, the ground-glass frame perhaps two feet away, the image appears very weak and faint. This is because the light is absorbed by or passes through the ground glass. Inasmuch as preparatory, yes, final adjustments are made while we are at the microscope and not at the camera, we place a piece of white cardboard in front of the ground glass, and projecting the image upon that, it is seen clear and distinct. We can remove our blue cell, as we do not require it just now, and proceed with the mechanical stage to find the portion of the object we wish to reproduce. Let me here observe that a good slide of dried human blood makes a splendid object to begin upon, as it will quickly show faults of lighting. This is the time to look out for internal reflections: remove the draw tubes and varnish the inside of the tube with good negative varnish. When it becomes tacky, allow the smoke of a kerosene lamp with the wick turned up, and the chimney removed, to coat the varnish surface; or line the tube with paper so varnished and smoked. So cover every surface that you regard as liable to prove troublesome.

Well, everything about the image on the paper screen appears as it should, and we are now prepared to complete the focussing, yet hardly so, for after having replaced our blue cell, shut the microscope in, and move our position to the ground glass. We find we cannot reach the milled head to the fine adjustment of the microscope. So we require to fix a little grooved pulley to our shelf which shall carry a light gum-elastic belt over the milled head of the fine adjustment. The latter should also be grooved to receive the belt. To the axle of our grooved pulley is attached a light rod which passes back to the camera. Now we can assume our photographic position and finish the focussing.

The question will be asked, "How far distant should the ground glass or sensitive plate be from the microscope?" To this question only a general answer can be given. The only thing gained by distance is amplification. And just here you must appreciate the difference between amplification and magnification.

If you desire increased detail in your picture you can only

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