

Microscopists. In order that the bearing of that experience may be rightly understood, it will be desirable in the first instance to examine the conditions on which *tremor* of the Microscopic image depends.

When the building in which the Microscopist is at work is thrown into vibration as a whole, as by the passage of a heavily-laden cart in the street outside,—or the floor of the room in which he is seated is made to vibrate by the tread of a person crossing it,—the Microscope and the observer move together; and if the frame of the Microscope were *perfectly rigid*, there would be no tremor of the image. For this tremor is the result, not of the vibration of the Microscope as a whole, but either (1) of the difference between the vibration of the Body as a whole and that of the object on the Stage; or (2) of the difference between the vibration of the two extremities of the Body, the ocular and the objective.

Now it scarcely seems to me possible to conceive a method of construction which should be more favourable to this *differential* vibration, especially at the ocular end of the Body, than that which is adopted in the Ross model. The long tubular body, fixed only at its base, is peculiarly subject to it; and although the oblique stays with which it is sometimes furnished diminish the vibrations of the tube, they by no means prevent it. The transverse arm and the stem which bears it, each have a vibration of their own; and it is obvious that the nearer to the fixed point of the whole system—which, in this arrangement, is the part of the racked Stem embraced by the tube that carries the Stage—flexure takes place, the greater will be the vibration of the Eye-piece, which is at the greatest distance from that fixed point. The only mode in which this vibration can be kept in check, is the giving great solidity to the Stem, the Arm, and the Body, especially the two former; and this, while objectionable on account of the cumbrousness which it imparts to the Microscope-stand, is by no means effectual for its purpose; as every Microscopist knows to his cost, when using very high powers under any condition but that of the most perfect stillness of the support.

On the other hand, in the Jackson model, the support of the Body along a great part of its length reduces to a minimum the vibration of the tube, and the consequent differential vibration of the eye-piece; and even in those modifications of it in which the