

physicians who have been too deeply immersed in the details of practice. . . . From conscience as well as convenience, they come to confine themselves to what is safe, or absolutely necessary; and thus is engendered, by degrees, a distrust of all that lies beyond this limit."

NOTE.—This Paper was originally read at a meeting of the Bombay Medical and Physical Society, in November, 1865. A few verbal corrections and alterations have merely been made before transmitting it for publication.

ART. XIII.—*Flax Mills—their Machinery; Accidents Occurring Therein, with Suggestions for their Prevention.* By THOMAS H. BABINGTON, M.D.; T.C.D.; M.R.I.A.; Surgeon to County Londonderry Infirmary.

THE above may be considered an extraordinary text on which to ground a communication to a medical and surgical journal. The subject is one of importance. It, in my opinion, demands the attention of the public at large, as ratepayers, and of the Legislature; and I trust my brethren in the profession will concur with me in thinking that I am not out of place in asking them to consider the subject for a short space.

I have lived, during my professional life (commenced in 1835), in the flax-growing province of Ulster; first, in County Donegal, medical officer of a large dispensary district; afterwards at Port-stewart, County Derry; then, for thirteen years, medical officer of Coleraine Union Workhouse; and for twelve years surgeon to the County Londonderry Infirmary. In each year I have had under my care many cases of accidents from flax mills, of greater or less magnitude. In some cases one or two fingers have been lost; in others a whole hand, often a whole limb, sacrificed; and, occasionally, life lost by the frightful injuries inflicted.

Flax, when pulled from the earth, is steeped for a certain time, then spread on grass lands and dried in the sun; afterwards dried in kilns constructed for the purpose; then bruised, and carried to the mills ("*scutch mills*," as they were formerly called), there to be scutched or cleaned. And here begins the danger to lives and limbs.

In order to have the flax properly scutched or cleaned—that is, to have all extraneous substances removed, nothing to be left but

the fibrous texture to be afterwards spun and woven—it is first submitted to a process of bruising, or trituration, by passing it through grooved metal rollers, similar to the rollers of a threshing machine. When sufficiently crushed and softened, it is submitted to the action of the “fliers” or “wipers,” which are sharp knife-like boards, set upon a spindle, and driven, as are the rollers, with great rapidity, either by water power or steam. This last process separates the “shows,” as they are called, and leaves the flax clean.

In each of these parts of the manufacture of the staple commodity of Ulster accidents frequently occur; and in each succeeding flax season we can scarcely take up any newspaper published in Ulster, from September to March, without finding a record of a case or cases of accidents at flax mills, some attended with loss of life, others with the loss of an arm, fore-arm, or hand, many with the loss of fingers; all the sufferers more or less injured, maimed, or mutilated, and left comparatively useless for the rest of their lives, too often to be supported, with their young families, by the poor rates, or frequently having their own laudable exertions for self support aided and supplemented by their kind neighbours.

The most serious form of accident we meet with is occasioned by the rolling machinery. These are grooved cylinders, and frequently a portion of flax sticks in them, or goes in crooked. The machinery is working with great rapidity, and the attendant, who is “feeding” the rollers, eager and anxious, makes a snap at the flax to pluck it out. Either a finger, the cuff of a coat, the sleeve of a shirt, or a portion of a female’s dress (for women are constantly employed at these mills), is caught, the whole hand and arm is dragged or sucked in, and the whole limb smashed and mutilated before the machinery can be stopped. It has happened that the arm has been torn off from the shoulder!!!

The other form of accident is from the “fliers,” “wipers,” or scutching apparatus. Although these “wipers,” or knife-like boards, are sheathed, and work in sheaths, still if the workman, or “scutcher,” is not particularly attentive, he may place his hand, holding the “stricks” of flax, too close to, or rather in front of, the “wiper,” and will receive a most severe blow, sometimes severing a finger or two from his hand, always inflicting a severe compound fracture, extending through one, two, or three fingers or metacarpal bones.

From the very large number of cases which have come under my own personal observation I have selected twenty, the heads of

which I annex, as an illustration of the statements I have made, that these flax-mill accidents are attended with frightful consequences—maiming, mutilation, permanent disablement, and even loss of life.

No. 1. W. B., aged twenty-four.—Left arm comminuted, contused, lacerated, elbow joint opened, lower extremity of humerus fractured. The fingers were caught in the rollers in an attempt to disentangle a portion of flax, the whole arm was dragged into the machinery, and was frightfully crushed and lacerated. Amputation four inches below shoulder-joint. Recovered.

No. 2. J. M.—Ulcerated stump, following amputation of right arm for injuries of a similar nature.

No. 3. J. M. H., aged forty.—Right hand lacerated, fractured; wrist-joint laid open, ends of radius and ulna fractured. An attempt was made to save the hand; gangrene set in, amputation of fore-arm above the line of demarcation, on the seventh day after the accident. Tetanus set in on fifth day after the operation, and the twelfth from occurrence of the accident. Died on the fourteenth day from the commencement of tetanic symptoms.

No. 4. John Dinsmore.—Entangled in rollers, caught by sleeve of his coat, whole hand and arm dragged in, all the bones fractured, and muscles lacerated, except the deltoid; axillary cavity laid open. Amputation at shoulder-joint. Recovered.

No. 5. Mary M'Neill, aged forty.—Attending the rollers, her fingers were caught and dragged in, all the fingers of right hand were crushed off; the machinery was working slowly, and she dragged her hand out, and actually pulled the median nerve almost from the root; several inches of it were hanging out of the wound. Tetanus set in on the eighth day after the accident, and she died on the seventh day, fifteen days from the occurrence of the injury.

No. 6. J. M. G., aged fifty.—Compound fracture of three metacarpal bones from a blow of the "wiper," or scutching apparatus. Made a good recovery, but was under treatment from 15th January to 4th May.

No. 7. J. S., aged thirty.—Similar accident to No. 6. Good recovery, after three months' treatment.

No. 8. J. P., aged seventeen.—Lacerated wounds of fore-arm, no fracture. Recovery after two months' treatment.

No. 9. J. L., aged fifteen.—Compound and comminuted fracture of fore-arm and humerus, dragged into the rollers. Arm amputated. Recovery.

No. 10. G. W., aged forty.—Compound fracture of first and second fingers of right hand from a blow of the wipers. Recovery.

No. 11. Sarah M., aged twenty-six.—Caught in the rollers. Compound fracture of thumb and fore-finger of right hand; both amputated. Recovered.

No. 12. Pat. M'Fadden, aged twelve.—Compound fracture of three fingers; one amputated. Recovered.

No. 13. Hugh M'E., aged twenty-one.—Fractured fingers and lacerated hand. Recovered.

No. 14. J. G., aged twelve.—Lacerated and fractured fingers. Recovered.

No. 15. J. M'M., aged thirty-five. Fractured and lacerated hand; one finger amputated. Recovered.

No. 16. J. C., aged twenty-four.—Fractured fingers. Recovered.

No. 17. John C., aged thirty.—Compound and comminuted fracture of forearm, elbow-joint, and humerus crushed in the rollers; arm amputated. Recovered.

No. 18. James Corry, aged twenty-six — Similar injuries as No. 17; arm amputated. Recovered.

No. 19. Ellen Logue, aged eighteen.—Dress caught in the rollers; arm dragged in, crushed, fractured, lacerations, reached close to shoulder-joint; the head of the humerus was split; amputation at shoulder-joint. Died on fourth day.

No. 20. James D., aged seventy-six, a thin, spare, weakly man.—Whole arm crushed in the rollers; amputation close to shoulder-joint, three hours after. Died from exhaustion on the second day after the operation.

The foregoing selection of only twenty cases from the many I could enumerate is sufficient to arrest our attention. Two amputations at the shoulder-joint, five amputations of arm, two cases of tetanus following the injuries; and the remainder—fractures and lacerations of hands or fingers—frequently requiring partial amputations; and all giving rise to much suffering, and long, painful, anxious, surgical care, treatment, attendance, and supervision.

I have now, in conclusion, to offer a few brief suggestions in order to prevent these accidents, and for the protection of the workers at flax mills.

1. That all flax mills be registered.

2. That the machinery be so enclosed as to prevent the possibility of the fingers, hands, or clothes of the workers being caught or entangled therein.

3. That the mills and machinery be regularly inspected by some competent authority, to see that the machinery is properly enclosed and protected; and that if any owner of a flax mill be found working without being registered, and the machinery certified as being fitly and properly protected, that he be subject to heavy penalties, and liable to pecuniary damages, should any accident occur from his neglect.

4. That all scutchers be paid proper daily wages, and not by the quantity cleaned, as by the cwt. or stone, as their eagerness to earn large wages makes them reckless and hastily careless.

5. That no public-house for the sale of spirits be allowed to exist within a mile of a flax mill, and that a severe penalty be imposed on any person bringing intoxicating liquors to a flax mill. Intemperance and drinking are most frequent about these mills, and lead to carelessness, indifference, and accidents.