Occupational Diseases in 18th Century —A Classic of Science

Medicine

A TREATISE OF THE DISEASES OF TRADESMEN, showing the various influence of particular trades upon the state of health; with the best methods to avoid or correct it, and useful hints proper to be minded in regulating the cure of all diseases incident to tradesmen. Written in Latin by Bern. Ramazzini, and now done in English. London, printed for A. Bell, 1705.

Of the Diseases of Glass-makers and Glass-grinders.

IN the whole Train of Tradesmen, I do not think there's any that manage their Business more wisely than those concern'd in the Glass-works. For they work only 6 Months of the Year, *that is,* in Winter and Spring, and the Rest of the Year they injoy themselves: And when they arrive at the fourtieth Year of their Age, they seasonably bid adieu to their Art, and spend the rest of their time either in injoying the easy Fruits of their former Labours, or in following some other Work. The hard laborious Work that these Men do, and which can't be bore but by Men of a robust Constitution, and that in the Vigour of their Age, is downright unsufferable for a long tract of Time. Indeed I take the melted Mass that floats in their Fornaces to be inoffensive, at least I know no sensible Harm it do's to the Workmen, for they never complain of that, neither is there any noysome Smell to be perceiv'd in the Glass-houses. The Nature of this Design does not allow me time to inquire particularly into the Nature of that Mass of which the Glass is made, or into the Mechanick Contrivance which forms the Glasses, by the intervention of Wind or Blowing. 'Tis sufficient to our present Purpose if we know that all the injury redounding to the Workmen from this sort of Work, is intirely owing to the violence of the Fire and sometimes the addition of some Minerals calculated for coloring the Glasses. The Workmen are obliged to stand constantly half naked in the coldest Season of the Year just by Furnaces heated to the last Degree, and there to blow the Glasses with their Eyes constantly fix'd upon the Fire and the melted Glass: So that their Eyes sustain the first Shock, and accordingly we find they oftentimes bewail their Misfortune in voiding a sharp waterish Humour, and grow thin and little, their watery Nature and Substance being exhausted and consum'd by the overtearing Heat. The same Heat tortures 'em with a perpetual & an insatiable Thirst, so that they are forc'd to drink often. But they drink Wine more willingly, than Water, for whoever drinks Water upon a great Heat from what Cause soever, will find it much more nocive than Wine; as it appears from the many instances of those who have dy'd suddenly by drinking cold Water upon great Heats.

They are likewise subject to the Diseases of the Breast; for having nothing on but their Shirt, their Breast is always expos'd to the Air, and when their Work is over, they're obliged to go in their Shirts from the Work-house to colder Places: So that Nature, the strong and robust, can't long bear such violent and sudden Changes; but must needs sink under Pleurisies, Asthma's and Chronical Coughs.

But far greater Misfortunes attend those who make the color'd Glasses for bracelets and ordinary Women's Ornaments, and other uses; for they can't color the Crystal without using Borax calcin'd, and Antimony with some Gold; all which they reduce to an impalpable Powder and mix it with the Glass in order to make a Paste. Now, while this is a doing, tho they cover and turn away their Face, they can't avoid receiving the Noxious Exhalations at the Mouth; nay it oftentimes falls out that they fall down dead, or are suffocated, or in Progress of time are tortured with Ulcers in the Mouth, Gullet, and Windpipe, and at last dye consumptive with Ulcers in their Lungs; as 'tis manifest from the Dissection of their Corps. . . .

Of the Diseases of Painters.

PAINTERS are also usually subject to various Disorders, such as the Tremblings of the Joynts, a Cachexy, a Blackness of the Teeth, a discolour'd Complexion; Melancholy and loss of Smelling: For it seldom happens that the Painters who use to draw the Pictures of others handsomer and better Complexion'd than the Originals, are themselves either handsome or well Complexion'd. For my part I have always observ'd that all the Painters I know either in this or other Towns, are a'most always sickly; and if we consult the Histories of Painters, we'll find they were not long-liv'd; especially if we confine our view to such as made a distinguishing Figure. History informs us that *Raphael Urbinas,* a very famous Painter was snatch'd away in the very Flower of his Age; & *Balthasar Castilioneus* condol'd his untimely Death in a very pretty Poem. 'Tis true, the Diseases of this sort of men may be imputed to their sedentary Life, and the Melancholy that feeds upon 'em, while they retire from human Society and bend all their Thoughts upon their Phantastick Idaea's. But the principal Cause of their sicklyness is the Matter of the Colors that's always among their Hands, and under Nose; I mean the red Lead, Cinnabar, Ceruss, Varnish, Oil of Wallnuts, and Oil of Linseed, with which they temper their Colours. and several other Paints made of various Minerals. Hence 'tis that their Shops have such a nasty stinking Smell, which is chiefly owing to the Varnish and foresaid Oils, and is very offensive to the Head; and perhaps the loss of Smell usual among Painters flows from no other Cause. Besides, when the Painters are about their Work, they have nasty daub'd Cloaths upon 'em, so that they can't avoid taking in at Mouth & Nostrils the offensive Exhalations; which, by invading the Seat of the Animal Spirits, and accompanying the Spirits to the Blood, disturb the Oeconomy of the natural Functions, and give rise to the above-mention'd Disorders. All the World knows that Cinnabar is the offspring of Mercury, Ceruss is made of Lead, Verdigrise of Copper, and the Ultra-marine color of Silver; for the Metallick Colours are much more durable than those of a vegetable Extraction, and for that reason the Painters value 'em more: In fine, 'tis plain that a'most all the Ingredients of Colors are taken from the Mineral Family, upon which score they can't choose but do harm, and by Consequence Painters must be liable to the

same Distempers (tho not in so flaming a Degree) with the Workmen that work in Mettal.

Upon this Head *Fernelius* gives a pretty curious Account, of an *Anjou* Painter, that was siez'd at first with a Shaking and Trembling in his Fingers and Hands, and afterwards with Convulsions in the same Parts, which likewise affected the whole Arm. Sometime after, the same Symptoms appear'd in his Feet, and at last he was taken with such a grievous Pain in his Stomach and both the Hypochondria, that neither Glysters, Fomentations, Baths, nor any sort of Remedy gave him ease. The only relief he had in the violence of the Fits, was to have three or four Men leaning with all their Weight upon his Belly, the Compression of which lessen'd the Torment. In this miserable Condition he continued for three Years; and then dy'd Consumptive. Our Author says, the noted Physicians were strangely divided in their Opinions of the true and genuine Cause of such a dismal Disorder; and that not only before, but after the opening of the Corps, for there was nothing preternatural to be seen about the Viscera. In reading this History, I could not but admire the open and candid Confession of *Fernelius,* who pursuant to the Custom of truly great Men, (as Celsus has it) makes this free acknowledgement: *O m n e s siquidem aberamus à scopo, & tota quod ajunt via errabamus,* i.e. *All of us mistook the Case, and were quite out of the Way.* He adds further that this Painter having us'd not only to wipe his Pencil with his Fingers, but imprudently to suck it clean; 'tis likely that the Cinnabar thrown upon the Fingers, was communicated to the Brain and the whole Nervous System, by the meer continuity of the Parts; and that receiv'd at the Mouth in sucking the Pencil, tainted the Ventricle and Intestines with an inexplicable malignant Quality, that prov'd the occult Cause of the immense Pain.

The same is the Cause of their discolour'd Complexions, and Cachectick Habit of Body; as well as of the Melancholick Fits they are usually Subject to. 'Tis said of *Antonius de Allegris,* commonly call'd *Corrigiensis* from *Corregio* the Place of his Nativity, that he was so melancholy and even stupid, that he had no Sense of the Value and Excellency either of himself or his Pieces; insomuch that he return'd to his Admirers the rewards they sent him, as if they been mistaken in giving a great Price for those Pictures which are now above any Price whatsoever.

Upon the Whole, when Painters are siez'd either with the above-mention'd Disorders, or with other common Diseases, care must be taken that the common Remedies be blended with those particularly calculated for redressing the Disorders occasion'd by Minerals: Of which above.

Of the Diseases of Learned Men.

WE conclude our History of the Diseases of Artificers or Tradesmen with a short view of those of the Learned World; hoping that the Men of Letters will not take it ill to find themselves rank'd in the Class of

Self portrait of Raphael. Was this famous painter "snatched away in the very flower of his age" by the deadly metals whose salts he used as pigments?

Tradesmen; considering that as other Tradesmen gain by their Trades, so they purchase to themselves by the pursuit of Letters, if not great Estates like those of Merchants, at least a Livelihood and many comfortable Conveniences: For I see few in this Age at least, that would give themselves the Trouble of pursuing Learning, if they were not pinch'd with narrow Circumstances before they set about it. So true 'tis that Necessity is at once the Mother of Mechanick Arts and of Wisdom. Pursuant to which Maxim *Aristophanes* writes, That if Poverty and Riches were out of the World, all things would be overturn'd, and Philosophy with all other Arts would lie uncultivated for want of Votaries.

Generally speaking, the Ingenious sort of Men, if pinch'd with Poverty, and buoy'd up with the Hopes of getting Riches, apply themselves intirely to the Study of Letters; and by that Means procure to themselves not only a splendid Estate, but great Reputation among the Persons of Quality, who are then forc'd to knock at the Gates of the Learned to ask Advice. But after all, tho' the pursuit of Learning affords a plentiful Harvest of Riches and Glory, it seldom fails to produce Thistles and an ugly Crop of Evils: For your Learned Men, to use *Ficinus's* Words, are as Slothful and Idle in their Body, as they are Active and Busie in their Mind and Brain, and so almost all of 'em, excepting the Practitioners of Physick, undergo the Inconveniences of a sedentary Life. 'Tis a known Saying, That a Man grows Wise by sitting; and accordingly they sit Night and Day among the Trophies of Learning, and are not aware of the Inconveniences accruing to their Bodies, till the hidden Causes of Diseases have gradually crept in upon 'em, and confined them to their Beds. I have already shewn the Inconveniences of a Sedentary Life, and therefore shall not insist upon 'em now.

The Professors of Learning are likewise not unfrequently subject to the Inconveniences of a standing Life; for to avoid the Injury of a sedentary Life, that's so much cry'd down, many of 'em run to the contrary Extream, and stand turning over their Books for several Hours and even whole Days, which is not less, nay perhaps more hurtful than constant sitting.

All the Men of Learning use to complain of a Weakness in the Stomach. *Celsus* says, A great many of the Inhabitants of Cities and Towns, and almost all the Lovers of Learning, have weak Stomachs. There's no hard Student almost but what complains of his Stomach: For while the Brain is imploy'd in digesting, what the Itch of Knowledge and the Love of Learning throws in, the Stomach can't but make an imperfect Digestion of the Aliment, by reason that the Animal Spirits are diverted and taken up in the intellectual Service; or that these Spirits are not convey'd to the Stomach with a sufficient Current, upon the account of the strong Application of the Nervous Fibres and the whole Nervous Systeme in profound Study. How much the Influx of the Animal Spirits contributes to the due Performance of all the natural Functions of the *Viscera,* is manifest from the Decay of paralytick Parts; for tho' these Parts are sypply'd with vital Juice by the perpetual Afflux of the arterious Blood, yet they dwindle and decay by being depriv'd of that nervous Juice or Spirits or whatever it is, that is convey'd to 'em thro' the Nerves. (*Turn to page* 175)

Trade Diseases—*Continued*

This gives rise to Crudities, great plenty of Flatus's, a Paleness and Meagreness all over the Body, the Parts being rob'd of their nutritious Juice; and in fine, all the Dammages that follow a *Cacochylia,* or faulty Chylification. Accordingly we find, that Studious Persons, tho' naturally of a jovial merry Temper, do in process of time become Melancholy and Heavy. We may say commonly, that Melancholick Persons are Ingenious; but we have more Reason to say that Ingenious People turn Melancholick, the more spirituous Part of their Blood being consum'd in the Exercise of the Mind, and only the earthy drossy Part left behind.

I do not deny, but that this Disorder may be considerably promoted by a Temperament of the Body that tends gradually to Melancholy, with a moderate mixture of the other Humours. *Ficinus* in the Book he writ for the Benefit of Studious Persons, gives several Reasons why Learned Men grow Melancholick, some of which he takes from natural Philosophy, and others from Astronomy, which was his chief Study; but all of 'em run upon the violent Motion and Dissipation of the Animal Spirits, that makes the Blood Black and Thick. We conclude therefore, that Learned Men are commonly subject to Melancholick Fits, especially if they are naturally of such a Constitution: And accordingly we find the thorough paced Scholars are Thin, Lean, wan Colour'd, Morose, and Lovers of a Solitary Life.

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A five-passenger airplane will be used by the African hunting expedition of Baron Louis de Rothschild, to conduct the party quickly from Alexandria to Nairobi.

An earthquake in New York State recently proved useful when it loosed several underground streams and filled reservoirs with much needed water.

The first parachute demonstration in America was made in 1837 in Philadelphia by John Wise, who released a cat and a dog with two small parachutes.

A 40-ton stone bull which guarded the palace of an Assyrian king, 800 B. C., is now to stand guard in the Oriental Institute of the University of Chicago.

Airplane Camera Reveals Hidden Canals

Archæology

AN elaborate system of canals built by Indian engineers somewhere about 1200 A. D., and now almost entirely lost to view, has been successfully mapped by the penetrating eye of the airplane camera. The mosaic map of what might be called invisible ruins was made from a U. S. Army plane and by an army photographer. Neil M. Judd, archaeologist of the U. S. National Museum, supervised the aerial survey over the Gila and Salt River valleys, in Arizona.

Preliminary reports from the army officers reassure Mr. Judd that the photographs achieved their purpose, though the work of developing and arranging the negatives is not complete. The pictures were taken from an altitude of about two miles.

The magic ability of airplane photography to bring back into existence the plans of vanished buildings surprised the people of England when Major O. G. S. Crawford showed that his air pictures could record the plans of Roman towns and fortresses long since plowed over. Now, Mr. Judd has shown that the same magic works for America's prehistory.

Only forty years ago, the lines of 400 miles of the prehistoric canals and laterals could be seen in central Arizona. Now, not more than 40 miles of this remarkable engineering work can be observed from the ground. The land which the Pueblo Indians irrigated so that they could raise their corn, beans and squashes is now green with alfalfa, citrus and date groves, fields of lettuce and cotton. The Coolidge Dam stores water for much of this farming.

The plan to study the Indians' system of irrigating this region was proposed by Senator Carl Hayden of Arizona, Mr. Judd stated. Last summer Senator Hayden noticed that where Indian reservation land was being prepared for irrigation the workmen were pulling up cactus, mesquite and other growth at the rate of twenty acres a day and filling in the ancient canals. He felt that some record of the old American engineering should be quickly made.

In many cases an airplane observer 2,000 feet up can see with his own eyes the course of the old canals, Mr. Judd found. Describing these observations and his study on the ground, Mr. Judd stated that the engineering of the Indians was sound. Their ideas were so sound, indeed, that many of the modern canals of the region, dug with steam shovels, have followed the same contours and approximately the same gradient. The Indians had to dig their canals with nothing better than stone tools and sticks. The loosened material was carried off in baskets. They had no metal, no beasts of burden.

Both the Pueblos and modern engineers have followed the same course of constructing canals and later abandoning them in favor of new ones, Mr. Judd explained. From the air it was possible to find points where one of the early Indian canals was cut across by a later one.

White settlers who first went into the Southwest made good use of the Indian engineering plans. One Mormon group which settled near the town of Mesa in the eighteen-seventies dug a canal in one of the courses set by Indians many centuries before, and a part of that canal is in use today, Mr. Judd said.

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Mining Hazards

Coal miners are not the only men who work under the ground in great danger to life and limb.

Metal miners must face a far greater variety of dread gases than coal miners, the most important of which is carbon monoxide, which strikes without warning and with uncanny fatality, D. Harrington and E. H. Denny, two experts of the U. S. Bureau of Mines, said.

"Some of the heaviest losses in metal mine fires have resulted from the burning of less than a railroad freight car, or only a few cords of timber," they said. The deadly fumes given off are sufficient to kill several hundred men if trapped in poorly ventilated places so frequently found in the relatively well ventilated metal mines.

Workers in tunnels and excavations for deep foundations need protection, too, they claimed. "It is high time for drastic action that will put such work on a higher plane as to safety, with particular reference to lighting, use of electricity and ventilation," the experts said. Methane, formed from wood in contact with water, and carbon dioxide, resulting from the decay of wood, are the chief dangers here.

Mining

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