OCCUPATIONAL DISEASES IN WOMEN

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EVER since woman left her narrow sphere of domestic duties and took to earning money away from home, especially in factories, she has become a social economic factor exposed to many dangers. In truth, this change to the factory has brought in its wake many new diseases affecting the vital, more particularly, the reproductive organs of women. In consequence, gynecology, too, has been compelled to enlarge its field and has now become social-gynecology. Many of the functional diseases it now treats are nothing but occupational diseases, most of which may be called economic, or social. Moreover, as all functional gynecological diseases become organic in time and as all organic diseases are per se functional, it is evident that social gynecology has an important part to play in present-day civilization.

Among the evil effects following this change, as mentioned above, from housework and domestic duties to factory work, one stands out preeminently as highly detrimental to the community and that is the perverted life woman is now more than ever compelled to lead. This means that she either cannot marry at all or that she must resort to contraceptives, thereby causing functional disturbances of the sexual organs in the first place and a decrease in the birth rate in the second. The latter consequence is due in large measure to disease and also to the fact that the will to propagate, or procreate, is inhibited. This is necessarily so. For if a woman becomes pregnant many times or if she has a large family, she cannot attend properly to her work and would in consequence lose her job. Hence the necessity for contraceptives with the subsequent bad effects.

Dr. Max Hirsch dealing with the subject of female occupation and female diseases furnished the impetus for an investigation of the findings in the Woman's Hospital and Infant's Home, Detroit, Michigan, to check up on his statistics. Our results are very similar to his.

We compared, for example, the birth rate among domestic workers with that of industrial or factory workers in 1000 cases.

Birth Rate

Industrial Workers		Domestic Workers	
1 Child	32%	1 Child	20%
2 Children	19%	2 Children	20%
3 "	12%	3 "	17%
4 "	4%	4 "	12%
5 "	4%	5 "	14%
6 "	0%	6 "	14%

To go into detail concerning the mechanism of the pathologic changes: Cohabitation may be divided into two preliminary acts: erotic preparation and erotic

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moistening of the vestibular glands, and into two subsequent acts: erection and ejaculation of the semen, which last corresponds to the female orgasm. Synchronous action on the part of both orgasms is a necessary condition for normal progress of the sexual act. Where no female orgasm occurs, or where a premature ejaculation of the male or a premature orgasm of the female, or any other disturbance takes place, the necessary exudation of the genital organs does not ensue. The result is chronic sexual hyperemia and hyperlymphia of the organs of the small pelvis and subsequent transudative and proliferative processes. In addition to this a psychic shock usually results from imperfect copulation. When the latter takes place again and again, it affects the whole system disastrously. In place of well mated activity, the asynchronous orgasm develops sexual disharmony and ill-mated activity on the part of the female.

Moreover, if the female sexual life continues perverted (Hugo Salus) for months and years, we have a source of various well defined pathologic-anatomic changes. Many forms of pruritus vulvae and vaginitis develop, likewise chronic induration of the uterus and so-called parametritis posterior and hyperplasia of the endometrium, retention cysts of the cervical glands, varicosity of the broad ligaments and many other disorders due to reflex action. It causes sterility and dysmenorrhea, and also the formation of retention cysts in the ovaries including cystic degeneration and follicular and corpus luteum cyst formation, and it presumably favors the formation of myoma. All the female organs react intensely to pressure, causing pain and discomfort.

The formation of myoma, although still an open question, seems to be most intimately connected with a chronic sexual irritation. Every woman troubled with myoma exhibits a greatly disturbed sexual life in the sense of being "ill-mated" or of practicing excessive masturbation, while a well-mated woman is never afflicted with myoma of the uterus. Thus, the social-economic conditions of our present-day civilization react upon the present and the future generations to the detriment of both and of our civilization itself.

A woman's reproductive activity presents a chain of fertile and sterile functions. In our civilization the latter far outnumber the former. Where nature has full sway the chain starts with a fertile function and consists of these alone. But in our present civilization, a whole series of sterile functions precedes the fertile ones, if indeed, the sterile ones do not become the rule. Probably this unnatural condition which prevents the uterus, intended for strong organic activity, from functioning at the proper time, if not altogether, furnishes one of the causes of metropathy. Moreover, we may say that there are but two main factors involved in this disease: (1) Taking up a vocation little suited to women, and (2) the attendant suppression of the natural reproductive activities. Today no girl or woman can live a normal sexual life, yet all experience abnormal sexual irritation. Many conditions stimulate the sexual desires, such as thrilling scenes described in books or witnessed in the movies, etc. Moreover, occupational work, especially under certain factory conditions, provides various other injurious factors and thereby does additional violence to a girl's sexual life for which there is no outlet. As to married women, cohabitation without resultant conception is in itself an irritation. Concerning *coitus interruptus* as a cause of metritis, Hugo Salus says that he could see pathologic changes of the uterus appear with the abuse mentioned, and disappear when normal conditions were restored. Hence, the personal element of danger in keeping down the birth rate in this matter.

Aside from the factors causing sexual disorders, as just mentioned, there are other contributory elements met with in our factories. Of these we may single out the following:

1. The factory itself with its crowded, dust- and germ-laden, and poorly ventilated rooms. 2. Conditions of work, i.e., long hours, cramped position, monotonous mechanical repetitions. 3. Chemic and toxic effects. 4. Factory accidents.

Occupational work and contracted pelvis stand in a cause and effect relation. From an examination of 117 cases at the Woman's Hospital Gynecological Clinic, it was proved beyond doubt, that the increase in contracted pelvis is in proportion as the bearing women belong to the heavy working classes and live in poor economic conditions. Aside from pelvic contraction it has been found that the soft parts of the genital canal and the pelvic outlet make labor difficult, since the tissues are defective in elasticity. This is a characteristic of hypoplasia and infantile constitutions, frequently met with among factory workers. The great frequency and visible increase in the rigidity of the os uteri in the first stage of labor may, moreover, be the result of hemorrhagic or ovariogenetic metropathy, commonly an occupational disease. Our statistics would readily show the connection between occupational work and resultant contracted pelvis, pelvic deformities, soft part abnormalities, and reduced fertility.

However, it is practically impossible to make a trustworthy estimate and deduction from statistics compiled by so many different physicians. And you all know that quoting such statistics is about as reliable as the Devil's quoting Scripture. Nevertheless, we may accept as true that our American people are not working in such bad surroundings as the people of Europe, due mainly to better environment and better factory conditions. Yet we, too, find that among the occupational diseases affecting the genital organs and their functions, chlorosis, anemia, and tuberculosis play an important part. Although these depend in great measure upon other factors, such as heredity and environment, experience has proved that certain industries predispose towards these diseases. Working conditions in underwear factories, in textile branches, in tailor shops, even in clerical positions, are to blame for a high percentage of chlorotic and anemic workers, individuals of weak constitution and development, whose tendency towards tuberculosis and other diseases is well known. Workers in trades where much dust forms, are especially liable to contract tuberculosis. This is the case in paper and rag sorting, in cotton spinning and weaving, in upholstering, in brush factories, and in the tobacco industry. The inhalation of glass dust as in glass cutting, causes much tuberculosis among women; likewise the infection from other workers suffering from this disease. Indeed, tuberculosis attacks glass cutters early and usually carries them off before they are forty years old.

The various chemicals used in industries produce toxic effects on the female constitution. Lead, used in metal works, in factories for making earthenware and pottery, in printing establishments, in shops for bleaching straw hats, etc., is the principle one to consider. Mercury, while less extensively employed, is found in incandescent lamp works, felt hat manufactories, etc., and acts in a similar manner to lead. The toxic effects of these drugs are explainable in several ways. The metals may enter the body through the lungs, skin, gastrointestinal tract, mixing with the saliva or being transferred directly through the medium of the hands.

Lead, and similarly other allied drugs, acts as an abortifacient. How it does so is not definitely known. It may act directly upon the mother, causing an irritation of the abdominal organs and the expulsion of the fetus, or may kill the fetus directly. Hirsch thinks the germ cells are affected, either or both parents having been attacked. In this case a weak fetus may result which cannot develop fully. In case they are carried to term, the infant mortality is very high. Levin shows that in 123 pregnancies, 73 ended in abortion, miscarriage or premature birth. Of the 50 infants born alive, 20 died in the first year, 8 in the second and 8 in the third.

Stumpf believes that the milk of these mothers contains lead and is in part responsible for this high mortality. Rott-Granjia reports 20 per cent of sterile women in the lead mines of Sardinia, and Carozzi states that among the wives of printers and typesetters there is 28.1 per cent sterility.

Carbon disulphide found in vulcanizing work also acts upon the germ cells, having the same effect as lead. It also seems to produce premature impotency in men and frigidity and menopause in women. Nicotine acts first on the thyroid producing a hyperactivity and later a hypothyroidism due to exhaustion of the gland. This distorts the normal metabolism. In addition, nicotine has been shown to be a contractor of uterine musele, acting upon the nervous system directly. Nicotine also acts on the germ cells as do the other drugs listed above.

Another agency affecting the germ cells in the x-ray. Women assistants in x-ray laboratories come in contact with x-rays which, because of their intensity, cause disturbances in structure and function of the abdominal organs, and are, therefore, dangerous to a possible progeny.

So far we have discussed factory workers and factory conditions. Yet many of the injurious elements found in factory work are present in occupational work done at home. In some instances, they are even counterbalanced by others. A woman doing occupational work at home is beyond the pale of factory protection and regulation. She often does more work than her factory sister, as she has housework and children to look after, and it is far easier for her to work overtime. She does not, it is true, work in crowded factory rooms, but she generally works in a room which serves at the same time as living room, bedroom, and kitchen. As a rule, home work falls to the lot of married women, who, for very evident reasons, will try to keep the family small, thus also bringing down the birth rate.

The continued standing or sitting in one position, necessary in most factories is very injurious. It causes engorgement of the veins of the abdomen and legs and weakens the ligamentous apparatus of the pelvis and feet. The continued motion of the foot, as in feeding foot power machines or operating sewing machines increases intraabdominal pressure and produces a displacement of the abdominal organs. This is especially true in asthenics, in whom the oft resultant anemia, nervousness, and exhaustion are far more frequent in occurrence. In girls under the age of twenty, in whom ossification of the pelvic bones is incomplete, the tiresome positions produce pelvic deformities by causing undue external strain on the muscles of the back, loins and thighs. As a result of these deformities, we get, of course, future dystocias and malpositions.

The results are even more serious than appear on the surface, as it must be remembered that most of these workers come from a poor environment and suffer with latent or developed rachitis. These conditions are even more harmful to the large group of asthenics found among such workers. Individuals of this type lead normal lives until something affects them, which causes this latent condition to appear. The asthenic constitution may be due to an hereditary taint, because the parents were organically or constitutionally inferior (tuberculosis, lues, diabetes, alcoholism, etc.), or to extra-chromosomal factors as toxic or infectious diseases which affect the mother during pregnancy and are transmitted to the fetus, disturbing its future organic and functional development. Or the child may become affected by contagious diseases in infancy, which influence development. Thus, according to Kraus-Brugsch, stunted forms arise either in consequence of chronic intoxication of the parents, or because of infant diseases, or environmental conditions, such as insufficient nourishment, nervous imbalance, and, we must add emphatically, occupational work in youthful years. At any rate, asthenics are noted to have a vascular hypoplasia, which results in incomplete development of the

genital organs and particularly of the ligamentous apparatus. All the tissues are flabby and particularly when occupational work is begun at an early age, there is associated splanchnoptosis, prolapse of the genital organs, and hernia.

Before proceeding farther it might be well to consult our statistics bearing on the point in hand.

GYNECOLOGICAL DISEASES AND ABNORMALITIES

ANALYSIS OF 720 CASES FROM WOMAN'S HOSPITAL AND INFANTS HOME.

	INDUSTRIAL WORKERS		DOMESTIC WORKERS
Adnexal Inflammation	18.8%		6.6%
Pelvic Inflammation	12 %		8.4%
Metropathy	21 %		11 %
Malposition	23.3%		16.8%
Abortions	13.2%		5.8%
Pregnancy Toxemias	10.9%		7.1%
Pelvic Deformities Soft Part Abnormalities	17%—35%	According to severity of work	1%—4%

All that has been said concerning the imperfect development of the genital organs and of the whole constitution of young women employed in industrial work holds good for those doing mental and intellectual work. Young girls preparing for academic work suffer about the same as young industrial workers shut in all day. Especially is this true in those educational institutions where young girls are under severe strain, either because of heavy courses, or private lessons, or extra entrance examinations. The troubles of young co-eds affected with constitutional ailments of a chlorotic, anemic, hypoplastic, and backward nature, are not always due to congenital conditions. They are the result of bodily injuries acquired from long sitting in bad posture and from overstraining the sympathetic and parasympathetic nervous systems. Pale complexions, school anemia, headaches, dizziness, palpitation of the heart, tachycardia, nervous excitability, dysmenorrhea, obstipation, hypoplasia, and retroversion of the uterus, hypoplasia of the parametrium and the ovaries, swelling of the thyroid gland, often result in cases where there is no such inherited disposition. These were all acquired affections.

MORBIDITY FROM FACTORY STATISTICS FROM UNITED STATES DEPARTMENT OF LABOR AND LOCAL FACTORY STATISTICS.

INDUSTRIAL WORKERS	Single 38 %		Married	43 %
	Men 28.7%		Women	40.5%

All the different lines of occupational work mentioned above, especially the work in factories, exert harmful influences upon the female constitution. To be sure, there are also other factors causing an increase in sexual abnormalities and constitutional anomalies. Yet this increase is principally due to harmful occupational work. This may act through direct mechanical (descensus) or inflammatory (endometritis) effect upon the genitals, or by favoring constitutional anomalies and general diseases, such as asthenia, hyperthyroidism, lymphatism, tuberculosis, chlorosis, anemia, etc.

We have obtained statistics of 1000 deliveries and tabulated them as follows:

WOMAN'S HOSPITAL AND INFANTS HOME

		INDUSTRIAL WORKERS	DOMESTIC WORKERS
Induced Labor	On account of pelvic deformities or soft part abnormalities	2	0.3
Forceps Deliveries		28	15
Versions		17.4	10
Embryotomy		0.25	0.1
Cesarean Section		0.2	0.04
Transverse Presentations		13	9.3
Still Births Abortions	According to severity of work	150-170	30

In view of all these disastrous effects which occupational work has upon the female constitution, it is clear that women, so easily fatigued, ought to be spared all additional exertion during menstruation and pregnancy with the attendant inevitable internal strain. In other words, woman, as experience has proved, is ill suited to withstand the uninterrupted even tension of vocational work.

Unfortunately we can only point out the cause of metropathy, but no remedy, as there are economic factors involved which, under the present conditions of our civilization, are insurmountable. None the less, we believe that it is a duty of the State to take an active interest in this very important question as future generations are at stake if woman cannot spare her body for the great task she has to perform as the life-giving mother of the race.

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