Address

ON

INFANTICIDE AND EXCESSIVE
INFANT MORTALITY.*Delivered at the Annual Meeting of the Harveian Society.*

BY

W. TYLER SMITH, M.D., F.R.C.P.,

PHYSICIAN-ACCOUCHEUR AT AND LECTURER ON MIDWIFERY IN
ST. MARY'S HOSPITAL.

At a meeting of the Harveian Society, held on May 17th, 1866, it was resolved, that a Committee should be appointed "to draw up a report on Infanticide, with the objects of suggesting the best means of checking the crime; and to report on the causes of death of young children; the best means for preventing excessive infant mortality, and to suggest some plan for the care and rearing of illegitimate children other than the present workhouse system."

The following were appointed members of the Committee: Dr. Tyler Smith, President of the Society; Mr. J. Brendon Curgenven and Dr. Charles D ysdale, Honorary Secretaries; Mr. Benson Baker; Dr. Hardwicke; Mr. Ernest Hart; Dr. Lankester; Dr. Sanderson; Mr. Sedgwick.

The Committee have held seven meetings; and the Honorary Secretaries have engaged in extensive correspondence, with medical men and others interested in the subject of infanticide and the various questions intimately connected with it. They have been in communication with Her Majesty's Government; through whose interposition they have been supplied with a large number of documents bearing on the care of foundlings and illegitimate children in France, Belgium, Italy, Prussia, Denmark, and Sweden; and they have sought information from the various charitable societies in this country and in the United States of America devoted to the care of infant children and the preservation of infant life. Altogether, a large mass of information has been accumulated by the Committee; who have agreed to a number of resolutions, which I shall presently read to the Society. I have, however, as Chairman, had the sanction of the Committee in drawing up an introduction to the resolutions themselves, which will in some measure explain them, and show the grounds upon which they are based. In doing this, I must disclaim for myself all merit save that of being the reporter of the Committee. To the labours of the Committee, I owe the great part of, indeed I may say all, the information upon which I shall ground my remarks; and I must, in justice, draw attention to the ability and zeal of the Secretaries, and more especially to the strenuous exertions of Mr. Curgenven. He it is to whom the idea of appointing the Committee in the first instance was due, and he has spared neither time nor pains to make it a success.

In the year 1864, there were born in England 47,448 illegitimate children. The total births were 740,275. The proportion of illegitimate births was, therefore, 6.4, or, in round numbers, 6½ per cent. The gross number of illegitimate births in the five years 1860-1-2-3-4, amounted to 227,661. It is this great mass of human life which requires special study, if we would deal with the prevention of infanticide and the preservation of infant life. And the evil is an increasing one. From the returns of the Registrar-

General, it is shown that the number of illegitimate children born in England and Wales in 1830, was 20,039. In 1861, the number was 44,157. Now, the entire population of England and Wales, at the census of 1831, was 13,896,797. At the census of 1861, the population was 20,066,224. Thus, while in thirty years the population of England and Wales had increased less than one-third, the number of illegitimate births had considerably more than doubled. Into the causes of this disproportionate increase, which dates from a particular time, it will hereafter be necessary to inquire. We need not go far to seek the causes which render the life of the illegitimate child less secure than the legitimate against violent, intentional, or accidental destruction. In its birth a disgrace, especially to its mother; the responsibility of its maintenance imperfectly or improperly defined; for the most part, born and reared in poverty (if reared at all); without participation in the ties and safeguards of home or family—it is not to be wondered at, if the illegitimate child fails, save as the exception, to reach maturity. As regards risks of existence, the illegitimate are more like animals low in the scale of creation, than ordinary human beings.

It is not meant, of course, to be asserted that infanticide and undue infant mortality do not occur in the case of the children of the married; but, in this class, the evils, particularly infanticide, are far less frequent and glaring; while the preventive measures, remedies, and punishments, adapted to the one, are also adapted to the others. Let us consider for a moment the various conditions under which single women are delivered, and we shall at once see the temptations to infanticide which exist, and what little chance there is of the infant being reared, if it should escape actual murder or death by neglect at or soon after birth. A great number of these deliveries occur secretly. The unmarried woman has almost always disguised her condition from her family and friends, or, if in service, from her master and mistress and fellow-servants. Domestic servants form, of all others, the largest class of mothers of illegitimate children. When labour comes on, the poor creature has made no previous preparation for taking care of her infant. Discovery involves loss of character and immediate dismissal, and she is tempted, and in too many instances in her suffering and despair yields to the temptation, to destroy the child and hide and dispose of its body. This, as is well known, is a common history.

If the pregnancy has been discovered, or the woman does what she can to provide for her infant, or her employers or friends take an interest in her, the best fate which is supposed possible is, that she should be received into a lying-in hospital. But there are difficulties here, inasmuch as such institutions are chiefly intended for married women; and, at all events, she has to maintain herself in the latter months of pregnancy, as she cannot be received into the hospital until actually in labour. After their delivery, such women, if in fair health, generally endeavour to become wet-nurses. They put out their own child, after two or three weeks' suckling, to dry-nurse, and enter respectable families as wet-nurses. In this way, the mother, warned by her former misfortune and folly, frequently passes on to some other situation, and is able to regain her character and position. This is well as regards the mother; but the child has probably met another fate. Recalling my own experience as an obstetric physician, I can scarcely remember an instance, in the course of twenty-five years, of the child of a wet-nurse, who was a single woman, living beyond infancy! The children are put out with very inexperienced dry-

nurses, and die, after a few weeks or months, of want of breast-milk, or of neglect and improper management. The payment required for dry-nursing a young infant being three, four, or five shillings a week, renders it almost impossible that this can be done by single women unaided, except out of the high wages of wet-nurses.

Then, again, a large number of single women are delivered in workhouses. Here, when once admitted, they are treated almost as prisoners. They are not allowed to leave unless they take their infants with them. Of course, an unmarried woman, weak from illness, characterless, and with a young infant, is in the most hopeless condition possible for supporting herself and child. In despair at their position in the workhouse, many of them attempt the almost impossible task. The results are such as might be expected. Their earnings, at the best, are inadequate to the proper sustenance of themselves and their children. They sink to dishonesty, or eke out needwork by prostitution, as a means of supporting their children. Many mothers of illegitimate children are professed prostitutes from this cause. The children themselves generally die in the struggle, or they die more immediately by the hands of their unhappy mothers.

A large number of illegitimate children gravitate to the workhouse apart from their mothers. They are brought thither as foundlings, or the mothers run away, or have died. The mortality of these pauper illegitimate children is enormous. If separated, from any cause, from the mother soon after birth, very few—not more than ten per cent.—live to complete the first year of life.

The pressure upon infant illegitimate life is so great, that infanticide takes occasionally forms which would be incredible were they not demonstrably proved. A series of recent trials shows, as in the case of Charlotte Winsor, that the destruction of the lives of infants has been systematised into a regular trade. This woman, for a given sum, was ready to relieve any mother of the burden of her illegitimate child by death. The Committee have obtained information that, in some localities in the North of England, infants and young children are entered in burial clubs, and, in the event of family misfortune, want of work, or pecuniary difficulty, the infant is allowed to die, and the money obtained from the burial club. Attempts are also sometimes made, obviously with no good purpose, to insure the lives of young children in insurance offices.

Certain causes, some of them of a preventable kind, tend to swell the number of illegitimate children, and so provide the material for infanticide. The promiscuous lodging of the sexes during hay and wheat harvesting; in hop-picking and cider-making; the public hiring of male and female servants, and mops, by which large numbers of young people of both sexes are collected together in certain places at particular times of the year; the crowding of young people in sleeping rooms, from the want of proper dwellings for the poor both in towns and in the country—are all prolific causes of illegitimacy. Another cause of illegitimacy is found in the excess of women over men in this country. The births of the sexes are tolerably equal; but, as the Registrar-General has observed, the men belonging to our women are many of them in Australia, America, or scattered in our numerous other colonies; or they are serving in the army and navy. This excess of women is most marked in our large towns; and it is in them that, as the rule, the proportion of illegitimate births is greatest. This fact is well worthy the attention of emigration authorities, with a view to the distribution of women in the colonies. Strange

as it may appear, illegitimacy is most rife in some districts not otherwise immoral, as in the counties of Westmoreland and Cumberland, where the illegitimate births are about 11 per cent. of the total births. Here the prevalence of illegitimacy is concurrent with, and may be caused by, a comparative absence of prostitution. The people in these counties are much better educated than in Lancashire or the West Riding. The ganging system, as it is called, which prevails in Norfolk, Suffolk, Cambridgeshire, Huntingdonshire, and Lincolnshire, and to some extent in the south-eastern counties during hop-picking, is a fruitful source of illegitimacy. One man will collect and hire out to farmers as many as a hundred boys and girls. Little or no provision is made for decency in lodging them; and the girls almost invariably become debauched, and are mothers at an early age.

As a remedy for some of the evils of illegitimacy, and as a means of preventing infanticide, the first idea which naturally presents itself is the establishment of foundling hospitals. The Committee have, however, not found any evidence in favour of such institutions. They have been established in most Christian countries to receive infants exposed and abandoned by their parents; but experience has shown that, when all children found exposed in the streets or elsewhere are taken in indiscriminately, such charities have been most shamefully abused.

Hospitals conducted on the plan of the *Enfants Trouvés* of Paris, tend to encourage:

1. Illicit connexion;
2. An increase of illegitimate births;
3. The abandonment of illegitimate children by mothers who could afford to rear them;
4. The abandonment of children born in wedlock by parents not desirous of large families.

Of these children, deprived at an early age of maternal care, not more than 10, or at most 15, per cent., survive; and the encouragement of the evils enumerated reacts most injuriously on the whole community. The experiment of a foundling hospital was once tried in this country on a large scale; and has been described by Mr. Brownlow, the Secretary to the Foundling. In the last century, some years after the establishment of the Foundling in Great Coram Street, that charity was, on the responsibility of Parliament, thrown open to indiscriminate admission. In the first year, the number received was 3296; in the second year 4085; in the third 4229; and during less than two months of the fourth year, 3324 were admitted. After this time, the system of indiscriminate admission was abolished. But in the short period referred to, no less than 14,934 infants were in this metropolis cast on the compassion and protection of the public! It has been truly said that the frail tenure by which an infant holds its life will not allow of a remitted attention, even for a few hours. Who, therefore, will be surprised, after hearing under what circumstances these poor children were left at the hospital-gate, that, instead of being a protection to the living, the institution became, as it were, a charnel house for the dead? It is a notorious fact, that many of the infants who were received at the gate did not live to be carried into the wards of the building; and, from the impossibility of procuring a sufficient number of proper nurses, the emaciated and diseased state in which many of these children were brought to the hospital, and the misconduct of those to whose care they were committed (notwithstanding these nurses were under the superintendence of certain ladies, sisters of charity), the deaths among them were so excessive, that of the 14,934 received, only 4400 lived to be apprenticed out; the mortality being

upwards of seventy per cent. But the state of things described could not possibly last long. The benevolent persons who had, in error, promoted a system fraught with so much mischief, hastened to retrace their steps; and Parliament, which by an inadvertence had sanctioned the experiment, put an end to the mischief by declaring, "that the indiscriminate admission of all children under a certain age into the hospital had been attended with many evil consequences, and that it be discontinued." The expense to the nation of this short-lived system was £500,000. Similarly disastrous results have followed the indiscriminate reception of foundlings in America and in most of the capitals of Europe. At the present time, the Foundling in Great Coram Street, though an excellent institution, scarcely answers to its name. The condition under which children are admitted is, that the father should be dead, unknown, or not to be found. The children are put out to nurse in colonies in the country, and a premium is given to the nurses for rearing them up to a certain age.

Intimately connected with infanticide, and the rearing of infants, is the subject of affiliation; and the evidence collected by the Committee tends to show that the law, as it is at present stands, calls for revision. Under the old bastardy laws, the punishment of illegitimacy fell heavily upon the father; by the modern code, the burden is made to fall on the mother; and the results are most disastrous as regards the child, while they show a total failure as regards the repression of illegitimate births. The great change in the law with regard to affiliation and illegitimacy dates from the passing of the New Poor Law. I proceed briefly to refer to the inquiries which preceded this enactment, the provisions of the Act itself, and the results as they have appeared to the Committee of the Society.

The Commissioners appointed in 1832 to inquire into the working of the Laws relating to the Poor, say in their report:

"As a further step towards the natural state of things, we recommend that the mother of an illegitimate child born after the passing of the Act be required to support it, and that any relief occasioned by the wants of the child, be considered relief afforded to the parent."

"We recommend that the second section of the 18th Eliz., cap. 3, and all other Acts which punish or charge the putative father of a bastard, shall, as to all bastards born after the passing of the intended Act, be repealed.

"Cases will no doubt occur of much hardship and cruelty, and it will often be regretted that these are not punishable at least by fine upon the offender. But the object of law is not to punish, but prevent, as is too clear it must not be maintained against its proper design, with a view to punishment; still less must it be maintained if it acts as an incentive.

"What we propose is intended to restore things, as far as it is possible, to the state in which they would have been if no such laws had ever existed, and to trust to those checks, and to those checks only, which Providence has imposed on licentiousness."

I am tempted to observe, that to have acted on this monstrous doctrine in other directions, as well as in the laws relating to bastardy, would, in putting things upon a "natural" basis, sweep away most of the legal safeguards of society. The Poor-law Amendment Act of 1834 did not entirely follow the recommendations of the Commissioners. All Acts punishing the fathers and mothers of illegitimate children were repealed; but the spirit, if not the letter, of the Commissioners, is evident throughout the New

Poor Law. The great burden of maintaining her illegitimate child up to the age of 16 is thrown upon the mother, and the father is practically allowed to escape. If she abandon it, the law follows and punishes her. If she marry, the man who makes her an honest woman is obliged by law to support another man's bastard—a provision in itself a check to her recovering her lost position. The guardians have the power of making the putative father liable for his illegitimate child when it becomes chargeable to the parish; but they do not in practice exercise this power. The mother is the person first and most easily reached by the law; and, practically, the recommendations of the Commissioners are and have been carried into operation during upwards of thirty years.

The results show that the promoters of the New Poor Law have not only failed to "prevent" illegitimacy, but that it has increased enormously under the "natural" system. It appears, too, that in removing the "incentive" which the defence of the woman under the old law supplied, they have established a still stronger "incentive" to illegitimacy in the comparative impunity they have given to the father. The Registrar-General, referring to the new Poor-law Act and the increase of illegitimate births between 1830 and 1842, says: "The number of illegitimate children registered in 1842 amounted to 34,796, which is 14,757, or 74 per cent., more than the numbers in Mr. Rickman's return in 1830. The population increased only 17 per cent. in the twelve years." "This difference may, perhaps, among other causes, be ascribed to the actual increase in the proportion of illegitimate children, during the operation of that important change in the Poor Law which threw the charge of maintaining their illegitimate offspring upon the mother." There can be little question that a great increase of illegitimacy in this country dates from the passing of the New Poor Law, and that an increase of infanticide and infant mortality is a necessary consequence.

The hardships of the mother as regards affiliation may be fairly stated as follows. As she has no remedy till the actual birth of the child, the putative father may abscond before her delivery. This, in the case of the father being a fellow-servant, frequently happens when the pregnancy is detected and both parties dismissed from service. It is always easy for the man to change his locality. After the birth of the child, the mother cannot proceed in the matter without first depositing the expenses. The law requires corroborative evidence; and this point is so strained against the woman, that she is often technically defeated, and the sole burden of the child thrown upon her, when there is no moral doubt as to the real father. The Committee have not felt themselves at liberty to suggest any alteration in this respect; but they feel that the law, as it stands, bears hardly on the mother. Something less than strict corroborative evidence might meet the requirements of justice, when the woman is otherwise of fair character, in the case of a first child, and when it can be shown that intimacy existed between the parties. But, if she succeed, the law has fixed the maximum at which the putative father is assessed at half-a-crown a week, and it is frequently a smaller sum. As regards the amount, there can be no question that it is in many cases too small. This sum is really of much less value now than it was in 1834. Upon this point, the officers of the Rescue Society and the Foundling, who have had vast experience in the matter, entirely agree with the Committee. The whole difficulty of getting the money, when the paternity has been settled, now falls upon the mother. The officers of the Poor Law are not allowed, under

heavy penalties, to assist her. If the father refuse to pay, or change his place of work, the mother has to follow and sue him; and this costs money for legal and travelling expenses. The result is, that few mothers get continuously the pittance awarded by the law; and, as already said, the great burden of bastardy is borne by the weaker and certainly not the most offending of the two parties to illegitimacy. For these and other reasons, the Committee have been unanimous in recommending that an alteration in the law should take place which would place the same legal burden upon the father as that which attaches to the mother; and that the father should be liable, not to the mother, but to the Poor-law authorities.

While, as regards maintenance, the law has borne with undue severity on the mother, and thus become indirectly an incentive to infanticide, the laws relating to infanticide itself have been defeated by their own severity. As a rule, the parties committing this heinous crime escape with impunity. Society is comparatively defenceless upon this point. By the laws now in force, infanticide is a capital crime, punishable by death; but, before any woman can be found guilty, entire live-birth must have been proved. That the child has breathed is not sufficient. A child in the womb is considered by the law *pars viscerum matris*. The child is not held as "in being" until the umbilical cord has been divided, and its own independent circulation set up. If it be killed while a foot or an arm remains in part or altogether *in utero*, it is no murder. Dr. Taylor remarks upon this: "If proof of an entire live-birth be in all cases rigorously demanded on trials for child-murder, it is scarcely possible, when the prisoner is ably defended, that any convictions for the crime should take place. . . . The numerous acquittals that take place on trials for this crime, in face of the strongest medical evidence, bear out the correctness of this opinion. The child is proved to have lived and breathed; but the medical evidence fails to show that the living and breathing took place or continued after entire delivery." This difficulty in regard to the law, with the feeling which prevails in the public mind against capital punishment in such cases, too often defeats justice altogether. Numerous cases are never detected; many are disposed of by coroners' juries in favour of the mother; and of those in which trials for murder take place, very few are convicted, and even in these the punishment of death is seldom carried out. The following is an extract from the recommendations of the Commission on Capital Punishment upon this subject. "Our attention has been called to the frequent failures of justice in cases of infanticide. The crime of infanticide, as distinguished from murder in general, is not known to the English law. The moment a child is born alive, it is as much under the protection of the law as an adult. We have considered whether the failure of justice, which undoubtedly often occurs in such cases, may not be obviated by some change in the law which shall add to the protection of new-born children. The principal obstacle which now prevents the due enforcement of the law is the extreme difficulty of giving positive proof that the child alleged to have been murdered was completely born alive. We have given this important and difficult subject our serious attention, and we have arrived at the opinion that an Act should be passed making it an offence punishable with penal servitude or imprisonment, at the discretion of the court, unlawfully and maliciously to inflict grievous bodily harm or serious injury upon a child during its birth, or within seven days afterwards, in case such child has subsequently died. No proof that the child was completely born alive should

be required." The evidence obtained by the Committee of the Society entirely bears out the wisdom of this humane alteration of the law. Under such an Act as that contemplated, many of the guilty, who now escape with impunity, would be punished, and the tendency of the law would be to prevent this crime. An apparent remission of severity, it would really increase and ensure the punishment and prevention of infanticide.

The Committee have arrived at conclusions in favour of a strict registration of still-births, and of the burial of still-born children. They recommend a system of registration of dry-nurses; and that none but competent and registered dry-nurses, under efficient supervision, should have the care of illegitimate infants. But the Committee desire to lay especial stress on their resolutions in favour of keeping both the mother and her illegitimate infant in the workhouse for four months from the date of delivery. Nothing can compensate for the want of maternal care and suckling during this period, and nothing tends so much to develop the natural affection of the mother for her child after this period has passed. They believe that such a system might be rendered self-supporting; that the workhouses might be made the real foundling institutions of the country; that the mothers would be enabled to regain their characters; and that an enormous saving of infant life would be thus effected.

In resuming the whole subject, it may be said that the present state of the law, in throwing the chief burden and punishment of illegitimacy upon the mother, has, by the comparative immunity given to the father, tended to increase the evil itself; that, as another result of the pressure upon the mother, the helpless infant has been destroyed by infanticide and preventable mortality to an enormous extent. The innocent child has been the chief party to suffer. All the recommendations of the Committee incline to the equitable adjustment of the burden between both parents, as a great safeguard to the child; and to this they have added various other measures for defending its life from criminal injury and culpable neglect.

The following are the recommendations adopted by the Committee.

1. That the Registration of all births should be compulsory.
2. That all still-born children should be registered; and that certificates of still births should only be received from medical men and certified midwives—a certified midwife to be a person who has received instruction and a certificate of competency from a lying-in hospital or maternity establishment. That no still-born child should be buried without a certificate.
3. That, in cases of still-born children where neither a medical man nor a certified midwife has been present, the Poor-law medical officer of the district should make inquiry into the case, and, if he see fit, acquaint the coroner, who may then hold an inquest as to the cause of death.
4. That the registration of an illegitimate child in any other name than that of its mother, when known, or the registering an illegitimate child as a legitimate one, should be a punishable offence.
5. That the crime of infanticide should no longer be punishable by death; but that the recommendation of the Royal Commission on Capital Punishments be adopted, and that the offence be considered as murder in the second degree.
6. That evidence be no longer required of complete separation from the mother—that is, of entire live-birth—for conviction; but that it be held sufficient for the medical and other evidence to prove

that the child was alive during birth, and that it died from violence or neglect.

7. That a single woman, certified to be pregnant by a medical man, should be enabled to make a declaration of the father before a magistrate, when there is reason to believe that he is likely to abscond.

8. That any pregnant woman, being destitute, should be at once admissible into the workhouse by application on or about the completion of the eighth month of pregnancy, on condition that she should engage to remain in the house for at least four months after the birth of the child, unless she can show clearly that, on leaving before the expiration of that time, she has a reasonable prospect of being able to support herself and child.

9. That, after the period of four months has elapsed, the mother, if a single woman, should be allowed to leave the infant in the workhouse; and that the guardians be empowered to recover from the mother in such cases a portion only of the sum required for the maintenance of the child.

10. That the guardians should have power to recover from the father of an illegitimate child a weekly sum towards its maintenance; and that the legal process of recovery should be assimilated to that for recovering the cost of maintenance of legitimate children deserted and left chargeable to the parish. The Committee consider that the maximum sum which may be assessed on the father of an illegitimate child should be raised from half-a-crown to five shillings per week.

11. That laundries, or some other means of remunerative occupation, be established in workhouses, for the self-maintenance of the mother during her stay therein.

12. That a classification of pregnant women and mothers should be adopted in workhouses, whereby the respectable married and single women should be separated from the vicious and more depraved class in the maternity and nursery departments.

13. That, for the rearing of children left in charge of the guardians, a colonising system should be adopted similar to that pursued by the Foundling Hospital, and to that followed under the old Poor-law system.

14. That no person be allowed to take charge of an illegitimate child to nurse who is not registered as a fit and proper person; and that she and the child, or children, in her care, should be under the supervision of the district Poor-law medical officer. Any person acting as a nurse to an illegitimate child and not being registered should be liable to a penalty, and penalties should be enforced in all cases for neglect or ill-treatment. That no nurse should be allowed to take charge of more than two children without the consent of the district medical officer.

15. That no single or married woman should take the situation of wet-nurse whose child is not placed in charge of a person registered as a dry-nurse.

16. That a central authority or superintendent should be appointed by the Poor-law Board to carry out the provisions in regard to dry-nurses, and to receive annual reports from the district Poor-law medical officers on the state of the illegitimate children and of the efficiency of the nurses under their superintendence.

17. That a register of dry-nurses should be kept by the district Poor-law medical officer; and that certificates of fitness as regards herself and her residence, signed by the district medical officers and also by the minister of the denomination to which she belongs, should be required of every nurse placed on the register.

18. That no infant or very young person be allowed

to be entered as members of burial clubs, or to become the subjects of life assurance.

19. That the establishment of Foundling Hospitals for the free and indiscriminate admission of infants would be attended by bad results.

20. In conclusion, the Committee are desirous of expressing the opinion that the following causes of illegitimacy and indirectly of infanticide require the attention of Government. 1. The overcrowding of the dwellings of the labouring classes in urban and rural districts. 2. The custom prevailing in the North and West of England and in Scotland of public hiring of servants. 3. The gang system in agriculture. 4. The promiscuous lodging of the sexes during hop-picking, harvests, cider-making, etc.

ON DEFORMITIES OF THE CRANIUM.*

By HOLMES COOTE, Esq., F.R.C.S.,

Surgeon to and Lecturer on Surgery at St. Bartholomew's Hospital, etc.

As in the skeleton of the larger reptilia, whose growth has not apparently that limit which is characteristic of the growth of mammalia, so in the human skull, certain pieces, which are commonly called the cranial bones, remain distinct for many years after the consolidation of the other portions of the osseous framework.

The cranium consists of four expanded vertebrae—the occipital, the parietal, the frontal, and the nasal; and the parts which remain distinct are, for the most part, the expanded spines, represented by the upper part of the occipital bone, the two parietal bones, the frontal bone, and the nasal bones.

The reason why these "bones" remain distinct is now understood. The sutural substance affords itself the material for ossification; it is the stroma for the deposit of phosphate of lime. Therefore, the development of the skull can only go on normally and in all directions so long as the different sutures remain distinct. If during the period of growth one suture, or only a part of one suture, become obliterated, the skull must become deformed, inasmuch as increase goes on at one part but not at another. Hence there will ensue "partial microcephalia", or else there must be a compensating enlargement in some other direction.

Professor Virchow has adopted the following classification of deformed skulls.

1. The obliquely contracted skull; of which there are two varieties.

a. That which proceeds from synostosis of half the coronal suture, i.e., anterior.

b. That which proceeds from synostosis of half the lambdoidal suture.

2. The transversely narrowed skull, or that which becomes elongated in the antero-posterior direction, of which there are four varieties.

a. That which proceeds from synostosis of the sagittal suture.

b. That which proceeds from lateral synostosis of the parietal and frontal bones, by ossification of the lateral and lower part of the coronal suture.

c. That which proceeds from synostosis of the parietal and sphenoid bones, by ossification of the sphenoparietal suture.

d. That which proceeds from synostosis of the parietal and the squamous portion of the temporal bones, by ossification of the squamosal suture.

* Read at the annual meeting of the Shropshire Scientific Branch, October 24th, 1866.