Pythagoras talked, it is said of an unmaterial unity, and a material duality. Whatever may have been his sense and views in such a doctrine it illustrates very well what we would endeavour to set forth in the following brief manner. Pythagoras has two brains and one mind, as contradistinguished from the hypothesis of some medical writers that we have two minds, or two hauses of one mind, and one brain. We think many of the phenomena of insanity attempted to be explained and accounted for in this latter way are indeed phenomena resulting from the duality of our nervous system, and not from one forming a double mind or a double-like being. We will use the term Brain to designate either of the cerebral hemispheres and cerebellum in its usual acceptation.
It was formerly the prevalent idea that the same fibres supplied to one side of the body alone came from...
Views on Decassation

Duality of the Mind
The opposite side of the cerebro-spinal axis lay the most beautiful arrangement of diacration, subtile and perfect of its kind, and all connection with the other amounting to nil and that in this way it was ensured the right brain alone sufficed the influence to the left side of the body and vice-versa. Moreover it was just as firmly held that whatever might be the extent of the injury to one brain it is the opposite side of the body which alone suffered, and the other remained entirely unaffected. Our views on these subjects must now be greatly modified from the researches of Poggendorf; Riedel; Stilling; J. F. Clark; Roder; Köhler; Gerlach; Lenhorsky; Van der Kolk and several others which have shown many intimate relations between nerve centres, ganglia etc. we were previously unaware of, and which show the close connections in one way or another of the two brains at their distribution through the body. On this of course will reduce the validity more or less of the well known theory of Dr. Magan and others that there exist a duality of the mind. We admit there are many dual phenomena of mind but we ascribe to the preponderance of these
Present view of dual phenomena in this essay.

Physical duality, structural and dynamic.
being caused by a double-natured and take
their nature to be manifestations of one mind
of a unity through two brains.

The two brains, the anatomical character of the
spinal cord, the arrangement of the cerebral-
spinal nerves, the double symmetry of the
frame and of most of the internal organs all
point to the duality of the animal life, and
suggest the existence of a force or life directing
to the left and another to the right which
again leads us back to the existence of a double
and separate cause of origin, in the two primordial
sources of creation and development. To two great
centres of power, to these which afterwards become
and form the two brains of man. There we
would also understand as being able to take the
place of, and fulfill the functions more or less the one
of the other from the now demonstrated close
correlations, and intra-supral communications of the
various nerves with each other, either before
they emerge from the cephalon, or afterwards
through the medium of the spinal nerves or
through the sympathetical system which has
Duplicity in the Embryo
in contrast with its developmental changes.

Example in the Seiner
latterly have looked with a zeal corresponding in some degree with the most importance of the subject.

We must go far back in the formation and development of the embryo, where this double character of origin of symmetry as well as of function as differing from the ultimate development or permanent form of the organ is to be seen and recognised throughout in every organ, before the double character becomes obliterated altogether by developing changes, or is only recognizable by that particular organ being symmetrical in itself and left but with the more visible remains (perhaps a small fissure or indentation) of a divisional origin. We would here direct attention to the fact that as in the case of the liver, we have but one example of it in the human body, still that is neither reason nor evidence against its origin being double. Certainly it may be said to be placed towards one side of the body, and not in an axial position either way, but that may be and yet both sides may be considered as two structures going in to make out a whole. Its embryonic origin is double.
Fecundation

D. Harvey

Changes after fecundation continue.

Germinal Mesoderm
Germinal Area

Primitive Groove

Serous Layer
Mucous Layer
In the formation of the germ the contact and entrance of an exterior cause is essential, that of the peel which according to Dr. Harvey and others, forms and controls the serous layer of the embryo, whereas the mucous layer and all that springs from it are derivatives from the female, so in this we do trace a double essential origin, and none remarkable still are the dual changes which subsequently ensure. If the ovum is not fecundated, then common degeneration and disintegration of it follows, and it is thrown out as an excretion merely, but if fecundated then the granular yolk divides first into two, and goes on multiplying divisionally in the multiplying ratio of two, four, eight, sixteen, etc. Afterwards when these arrange themselves up as the embryonal membrane, and aggregate more together to form the embryonal area, the embryo appears, first round, then somewhat oval till three years of two longitudinal elevations similar and parallel to form the Primitive Groove. As this is going on, another dual division is observed taking place, consisting in the splitting of the embryonal membrane into two layers, an outer, the serous, and an internal, the mucous. The primitive groove becomes
Chorda Dorsalis.

Embryonic Heart development.

Artic System

Blood vessels

Nervous System
closed, after it has enlarged certainly forming the cavity for the cerebral and spinal cord, but before closing the cerebral vessels are developed on each side of what we may term a nervous axis. The appearance of two linear masses of cells in a line parallel to, and on both sides of the primitive groove, the chorda dorsalis which forms the foundation for the formation of the vertebral column and its curvature is another indication of our dual development; and taking a cursory view of each of the embryonic vascular vessels it builds throughout.

The heart in its earliest stage presents itself in the form of a mass of aggregated cells, and has no appearance of a cavity, but that shortly appears apparently from the separation from each other of the cells of the central portion; and to first forth a hypothesis based partly much on observation. Perhaps, the heart is a central axis, and from it a dual system of vessels is established, the aortic proceeding in a right direction, and the venous is formed on the left. Above all in connection with our subject we see that the nervous system is carried out-
Example of Cuvier's type.

Ascidia mammillata

Triarcha tenebriosa

Dioctria ten. Tabirrus

Articulata

Arrangement in Electric Ray
in the most complete duality. Low down in the scale of creation we observe this law. Cuvier points out the Ascidia Mammillata as a primordial type of a nervous system, and in it there is a ganglion situated on the muscular surface midway between the branchial and anal orifices, which is in almost two separate portions, but from it a double set of nerves numerically the same, and proportionally alike in size, one set going towards the anal orifice, and losing themselves in a particular ring over this side of the animal, and another set going towards the cephalic ganglion, and surrounding it in a nervous ring, very distinct. In the larval state of the coleopterous insect Timarcha tenebrosa the two brains are very distinct. In the malitoris this duality is seen very well in the appearance of two parallel cords with connections here and there in the shape of ganglia which may be fairly regarded as both commissures and new centres of force. Articulates have two nervous centres, as shown by M. Serres. In the family of Torpedinidae or Electric Rays the electrical apparatus consists of two masses disposed, one on each side of the skull, occupying the space...
Example in the Sphynx Liguerti

Note on Insecta

Of the Spiders.
between the capsule, and the base of the pectoral fin; and besides there is a double nervous development. In the Antennulae dualit is observable and easily watched in the Pupa state of the Sphinx ligustri, and going on till it is fully developed in the Imago, a perfect insect, as also is the tendency of the metamorphosis to concentrate the ganglionic portion of the nervous system in the head and thorax. In many larvae the two nervous cords remain quite distinct from each other. It is useful to take note amongst the Insecta of the concentration of the nervous masses at the origin of the nerves supplying both pairs of wings, and that a communication is seen between the two ganglia to co-ordinate motion. This is witnessed in the Hymenoptera and many Lepidoptera remarkable for speed of motion. In the Coleoptera again where the elytra are motionless during flight the ganglia are small and generally remain entirely separate. In the Spiders there is in the abdomen a double nervous cord without any ganglia to connect or enforce both or either cord and the two cephalic ganglia are very distinct, and the eight thoracic ganglia are still dual in
in their origin as they are in their arrangement in the embryo, though so closely approximated together as almost to form two complete nervous lobes. The Coleoptera, above mentioned, in that relation are interesting as bearing on the Law of Reflex Nutrition and Development.

In the mollusca the law of duality holds pretty truly as seen in the oyster, limpet, &c. whose ganglia formos commissural transverse connections. Further we would point out here that though there be a concentration of the dual nerve masses or cords into one ganglion, still it is but a concentration merely. The General Post Office for Scotland would not be lost to existence or identification if merged into St. Martin's-le-Grand. Neither are the ganglia when merged into a lobe. On the same principle longitudinal concentration of the nerve masses is to be so regarded.

In the vertebrata generally a dual nervous system is visibly carried out as in the Amphioxus. In vertebrata there is bilateral symmetry of frame and most of the organs inside the frame are dual, as are also all the organs of special sense. We can taste on both at once or on either side of the
Bilateral Symmetry

Sympathetic System

Use of

Duality of

Seat of Fevers

Experiment of Bernard
central portion of the tongue. In reference to bilateral symmetry we take that as originating more from a double neuro-polar excitation an effect, not a cause. The sympathetic system of nerves we hold to be for the control of organic life, that is for nutrition, comprehending the primary and secondary digestion, and its importance in a dual point of view may be seen in cases where there occurs an interference with its functions, as for example in ague limited to one half of the body, in cutaneous hemiplegia, congenital ichthyosis of one half of the body, and various other diseases; indeed it may be true that most if not all fever once their seat to this system of nerves, and our endeavour in the prevention or the cure of these diseases should be to find out those remedies (as Cinchona for one) which act upon the sympathetic class of nerves. M. C. Bernard removed from one side of the head of a dog its cervical ganglion, and that grew to and remained at a higher temperature for a year and a half. Numerous other experiments of the same nature by this physiologist confirm both the functional and structural development of the
synthetic system on the dual principle, and
that of the centrospherical in general.

Dr. Wegau has the theory that we have two
brains, but he shies it in theosophical
conclusion that we have two minds or two wills
as he so frequently frustrates them. Nothing
seems to take off the same ground as ex-
planatory of certain and of any case of insanit.
Obviously that is a very materialistic
function to conclude from our dual development,
and in contradistinction to the fact four rising at
will any special sense as the sight and in this
manner—Close the left eye, and fix the vision
through the right on a particular object, and see
whether that an object of consciousness; then
change the experiment to closing the right eye
and opening the left fixing vision again on the
same object, and again this becomes in every way
a similar object of consciousness. Again:

Take two pieces of coloured glass, the one blue
and the other red and look with both eyes
on the same object and it will appear purple.
Or to vary the experiment and make it
more decisive take a stroboscopic and have
Inference from Experiments

On "a double mind"

Cases to doubt this.
one glass made with a yellow colour and the other of a blue and the picture will then be green. In either of these cases we have really two different objects, but on the retina but there must be a unity to make us conscious of the same object with two eyes. That is with two brains, and that unity is the mind.

That we can perform the function, or rather that the mind can manifest its phenomena through the medium of one brain is no argument that we have two minds. There are many cases on record by stereotomists, Marshall Hall, of one brain being almost if not wholly destroyed by disease, and the intellectual faculties have been quite impaired, and have remained so for long till the remaining brain becomes involved when these cannot be manifested, which is important as they are for the establishment of the doctrine of the duality of the nervous system. As important in disproving the idea that mind is a pure function of the two brains, as the doctrine of the duality of the mind inclines us to, and in fact is an easy and infer-
On Auid a function of the Eevenoehsca,

Hemiplegia?

Double consciousness
Theory of

Probable explanation of
ental corollary from it. Now if mind was a mere function of the two brains, in cases of disease of one it must necessarily be deficient in some way or other, whereas it frequently is not at all. Alkonea, if so what becomes of the mind or how is it affected in Hemiplagia? Its power to form a judgment, and the power then to will in accordance with the result of that judgment remains intact, yet no motion ensues, however much the patient may exercise the will.

In regard to the phenomena of double consciousness in insanity, it may be a mere rapid fluctuation of mind from one train of thought to another, a ranging from one state to the other by alternation, each having the succession of external impressions and appropriate trains of thought, but more likely it results from the double character of our nervous system, and is incident to that fact. It may be that it is on the principle of a want of co-ordination between the two brains, the two recipients of spurious conceptions, or sensory perceptions, for double consciousness in insanity is not witnessed nor known to exist as far as we have been able to trace
Unity of Mind
except in reference to pictorial conceptions, many in relation to nonmaterialistic conceptions; which goes to prove that we have one mind, one unity, one subjective consciousness, and that such a doctrine as a double-being and double mind is utterly untenable.

Altogether, the mind has the relation to the body, to our dual nervous system, of spirit and matter, the body being the world through which it receives its influences, through which it acts, and is responsible for its acting.

Were it convenient to enlarge much more on this subject, we might do so, and bring forward many other new views and confirmations of the same, but we prefer to lay them before the University in another form.

Andrew Stephen
26 Gilmore Place. Edinburgh.

27th May, 1861.