

Wagner, Moritz. 1873. The Darwinian Theory and the Law of the Migration of Organisms., Translation by J.L. Laird of a paper published in 1868 ed. Edward Stanford, London. [Translation of: Wagner, M. 1868. Darwin'sche Theorie und das Migrationsgesetz der Organismen. Duncker & Humblot, Leipzig.]

Some extracts

p. 4: in Preface.

Darwin's views appear to coincide on most points with those expressed in this pamphlet. With extreme modesty he writes that from insufficient knowledge of many facts here communicated, he had been unable in his work to make proper use of the geographical distribution of plants and animals; kindly adding, that my theory of migration had set aside many difficulties and objections advanced against his theory of transmutation, in a manner which had never before occurred even to himself.

On one – certainly very important – point only is Darwin disposed to differ from me, *viz.*, as to whether migration (that is to say, the constant tendency of individuals to wander from the station of their species, and by means of colonization to find better conditions of life for themselves and their descendants) is merely advantageous, or absolutely necessary for the formation of races and species.

The difference of opinion existing between Darwin and myself on so important a point has induced me to treat it more fully at the end of this work. Perhaps that generous British naturalist, who is always open to conviction [to being convinced], after calmly weighing my reasons and data, may yet be induced to modify his opinions.

The migration of organisms and their colonization are, according to my conviction, a necessary condition of natural selection. The former confirm the latter, set aside the most important objections which have been raised to the theory, and render the whole natural process of the formation of species much clearer than was previously the case.

Since the commencement of civilization the migration of animals and plants, and with it the capability of variation and development by natural selection, has become more and more limited; in fact, it must at last entirely cease and give place to artificial selection. [eh? For ALL organisms?]

p. 10: main part of book:

Individual variability, inheritance of new characteristics by the descendants, and enhancement of these characteristics in a certain direction for a series of generations, and all subject to the

p. 11

struggle for existence, are the three fundamental ideas of the Darwinian theory. Do they suffice to explain the continual and necessary formation of new species? I believe there is a considerable defect in Darwin's theory, and for its satisfactory explanation, we must call to our aid yet another important law, which I will call the law of migration of organisms.

Darwin's work neither satisfactorily explains the external cause which gives the first impulse to increased individual variability, and consequently to natural selection; nor that condition which, in connection with a certain advantage in the struggle for life, renders the new characteristics indispensable. [?? unclear] The latter is according to my conviction solely fulfilled by the voluntary or passive migration of organisms and colonization, which depends in a great measure on the configuration of the country; so that only under favourable conditions the home of a new species would be founded.

p. 12:

... in the North of Africa, ... I was struck, ... by the circumstance that the larger rivers, which flow principally in a northerly direction from the watershed of the Atlas range to the Mediterranean, *formed an effectual barrier to the progress of a considerable number of species.*

p. 14:

In North Africa very important data are furnished by certain varieties of beetles, especially by the section Heteromera, many species of which live almost exclusively on the saliferous sands of the sea coast. The majority of these Heteromera, abruptly separated by river beds, belong to the *Melasomae* chiefly to the genera *Pimelia*, *Blaps*, *Adesmia*, *Erodius*, *Asida*, *Tentyria*. ...

I observed the same to be the case with the numerous specimens I collected, mostly endemical snails. As for example *Helix hieroglyphicula*, which is not found farther east than the Shelif, whilst the western boundary of *H. vermiculata* is equally sharply defined by the same rapid river.

...

This remarkable fact in the limitation of species by so small a natural barrier as a river of moderate breadth was, after its publication in 1841, curiously interpreted by a later naturalist, a rigid adherent to the letter of the Mosaic record. ...

p. 15

"... was determined by the fiat of the almighty from the beginning."

...

An arbitrary determination of the area occupied by each species must certainly have implied some particular aim of the Creator which we are unable to discover. But is it possible to go so far as to believe that there was a special act of creation for a species of *Scarabaeus* with punctured elytra, geographically limited to one bank of a river, whilst on the opposite shore a second act was necessary to produce a beetle of the same genus with smooth elytra? Such an interpretation of the works of the Creator must appear somewhat trifling to us all.

It is to be observed that only animals of limited mobility are confined by such narrow barriers; ...

p. 16:

... Similar instances occur in certain cases of Hymenoptera, Lepidoptera and Diptera, but then the barrier is formed by a volume of water over five miles in breadth, such as the Straits of Gibraltar, not by streams of moderate breadth like the rivers of Algeria.

[e.g. *Pontia dorei* and *Hipparchia meone* in the Lepidoptera; widespread in N. Africa entirely wanting in the South of Spain]

p. 23:

This remarkable dependence of the character of insular organic life on the nearest continent, even when separated from it by over 100 geographical miles, is an important fact which repeats itself everywhere, and points to a common cause [also Darwin's theory! And Wallace 1855 et seq.]

p. 29:

Should the new colony, founded by such wanderers, lie very close to the old station, and be inadequately protected by mountain or river barriers from frequent communication with the parent stock, then both limits will soon be effaced, and the new colony become one with the old station. In this case, a constant variety or new species cannot be produced, because the free crossing of a new variety with the old unaltered stock will always cause it to revert to the original type; in other words, will destroy the new form.*

The formation of a real variety, which Darwin, as we know, regards as the commencement of a new species, will only succeed when a few individuals, having crossed the barriers of their station, are able to separate themselves for a long time from the old stock.

*This tendency of all animals and plants to migrate, arising out of the two most powerful natural impulses of self-preservation and reproduction, is a deeply-seated necessity, which may be placed side by side with the emigration fever in the overpopulated countries of Europe.

p. 30:

[Darwin ...] rightly attaches the greatest importance to the influence of food. More abundant food, which must always give impetus to many internal physiological changes of the organism, hinders animals from exerting themselves so much. Disuse of one organ will reduce it and correlation of growth connects the organization in such a manner, that the variation of one part of the body causes a change in others.

Under these altered conditions of life – on which the climate has but slight direct influence – the quality of individual variability inherent in every organism, and without which natural selection is not conceivable, must be greatly enhanced. ... The first altered descendants of such colonists thus become the parent stock, and their home the centre of the station of a new species.

The formation and continuance of a race will always be endangered where numerous individuals of the original stock become mixed up with, and by frequent crossings disturb, or entirely suppress it.

p. 31:

[quotes Darwin p. 85 of Vol. 2 of Animals and Plants under Domestication to say that free intercrossing promotes uniformity]

p. 32:

[Man found dogs easy to select for different varieties, but] "he was unsuccessful in obtaining many races of cats by selection, because crosses of the latter were not easily to be avoided on account of their nocturnal wanderings."

p. 73:

Whilst nearly-related races avoid each other with hatred and disgust, a slight degree of individual variability appears to act rather as an attraction. All pigeon fanciers know that slightly different pigeons – for instance those somewhat different in plumage – readily pair, whilst pigeons of two distinct kinds, such as pouters, fantails, and so forth, if left to their free impulses, almost always seek out individuals of the same kind, and can only be brought to pair by compulsion, that is, by temporary separation from their species.*

Those who with Darwin deny the necessity of isolation for natural selection, and only admit its advantage, must indicate another cause for the first stimulus to increased variation, and other conditions upon which the preservation of the new characteristics depend.

*[refers to human interest in nearly related races, fair northern europeans for dark-haired southern europeans, but not to distantly related races.] "Europeans have never been known to be attracted by Hottentots, Negroes or Esquimaux. Scarcity of women of the same race is the sole cause of the bastard races of the West Indies and South America."

p. 76:

If the natural barrier or intervening space is insufficient to protect the colony for a long time from frequent invasions of the old stock, the incipient variety will again retrograde into the old form; but if the contrary is the case, it will become a so-called permanent variety (race) or new species.

p. 78:

I will now endeavour, in three short propositions, to formulate the simple causes or laws which have "geographically limited the form and fixed its typical characteristics."

1. The greater the change in the conditions to which individuals are subjected on emigrating to another territory, the more intense must be the inherent variability of each organism.

2. The less the even tenor of this increased individual variability of organisms is interrupted by frequent crosses with emigrants of the old stock, the more frequently will nature be successful in forming a new variety or incipient species, by the accumulation and inheritance of fresh characteristics.

3. The more advantageous to the variety the change in each single organ, the better it will be able to adapt itself to surrounding circumstances; and the longer the selection of an incipient variety of colonists remains un-

p. 79:

disturbed by the old stock, the more frequently will a new species arise out of the variety.