INSECT FLIGHT: TESTIMONY TO CREATION

STEPHEN BUTT*

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The evolutionists propose utterly different schemes, alike only in their implausibility, for the origin of flight among insects. As the saying is, when they differ so they can not all be right, but they could all be wrong.

Creationists, on the other hand, can view the great variety of methods of flight among insects as evidence of the Creator's skill, in giving His creatures equipment to make them fit for the style of life to which He assigned them.

The flight of insects is a fascinating phenomenon which has inspired much study by scientists. Insects are the only invertebrates which possess this capability. This enables them to exist in great numbers of environmental situations, so they are much more diverse than other invertebrates, with approximately one million species described.

The typical insect wing is a superbly designed flying tool. It consists of a thin membrane reinforced throughout with numerous veins which result in a very functional compromise between weight and strength. The anterior portion of the wing is stiffened with a heavy costal vein, and the wing then becomes thinner and more flexible toward the trailing edge. This structure is capable of a very strong sculling action. This sculling action can be analogized by fanning air into a fire.[1] If one selects a flat board for the task, he will find it quite ineffective. A small piece of rug held stiff on one margin, or a moderately flexible piece of cardboard is much more effective.

Insects which have two pairs of wings frequently join the anterior and posterior wings by means of hooks and grooves to create a single sculling unit as in the case of the Hymenoptera and many Lepidoptera. Insects such as the Odonata, which do not have their wings joined, overcome the problem of air turbulence by beating the front and rear pairs alternately.

Wing movement in insects is complex, and consists of elevation and depression, fore and aft movement, pronation and supination (twisting) and changes in shape by folding and buckling.[2] The wingtips describe a figure-8 pattern. Many insects can hover or fly backward by changing the angle of the figure-8. Some of the very good fliers (Diptera, Hymenoptera, and some Lepidoptera) can fly sideways or rotate about the head or tail by employing unequal wing movement. Romoser points out that the wing movement of insects is so efficient that it produces a polarized flow of air from front to rear during 85 per cent of the wingbeat cycle.[2]

Insects with a large wing area and a slower, fluttering flight such as Isoptera, butterflies such as *Papilio*, and the Odonota, have the wing muscles attached directly to the wings, and one nerve impulse creates one wing muscle contraction, much like invertebrate muscle. The Ephemeroptera utilize this scheme. Their wings are constructed like corrugated sheets, which are very poor for a forward sculling action, but are admirably suited to the peculiar up and down flight they employ for the mating process, as they do not feed while in the adult stage.[1]

The Hymenoptera and Diptera, and some Lepidoptera such as Sphingid moths, must combine excellent flying ability with a small wing area. A honeybee, for example, could not function well in its hive, if it had large wings which are bulky even when folded over the back, as in *Papilio* or the Dobson Fly. They compensate for a reduced wing area with a very rapid wingbeat. Wingbeat frequencies vary from 55 per second for some beetles, to over 200 per second for the honeybee, and an incredible 1,046 per second for a midge (Forcipomyia). Clearly, nerve tissue is not capable of firing this many times a second. These insects move their wings by an indirect, asynchronous muscle scheme. Opposing pairs of muscles act to depress and elevate the top of the thorax, to which the wing bases are attached. With a portion of the thorax as a fulcrum, the wings are levered up and down. A single motor nerve stimulus begins a cycle in which the contraction of one member of a muscle pair stretches the opposing muscle and stimulates it to contract. This process can be repeated several times before another nerve stimulus becomes necessary to reinitiate the process, so very high wingbeat frequencies can be obtained. The natural elasticity of the thorax in the Diptera and some Coleoptera acts to enhance the activity by imparting a "click" action in which the wings are relaxed in the up

*Mr. Stephen Butt, M.S., lives at 5124 S.E. 115th, Portland Oregon 97266.

NOTICE OF OPEN MEETING

Notice Regarding Research Reports

An open meeting of the C.R.S. Board will be held beginning at 1:00 p.m., Friday, April 18, 1980, at the Concordia College, Ann Arbor, Michigan.

The C.R.S. does not hold conventions, and this meeting is not to be understood as a Creation Seminar in the usual sense of that term. However, various individuals and groups carrying out research under the auspices of the C.R.S. will give progress reports on such activity. C.R.S. members wishing to present short reports of their own creation research projects should write to Dr. Emmett Williams, Jr., 5093 Williamsport Drive, Norcross, Georgia 30071, submitting a one-page abstract of the data and conclusions to be shared. The abstracts may be printed for circulation at the meeting. Dr. Williams will coordinate the session and will include as many papers as time permits. Those wishing to attend are cordially invited.

General announcements and progress reports will also be given on Friday, possibly at a session held Friday evening, beginning at 6:00 p.m.

On Saturday morning, April 19, 1980, the Board of the C.R.S. will go into closed session.

and down positions. As they pass the center of the wingbeat pattern, they are driven swiftly to the extremes by this spring action.

Truly the existance of such marvelous design must corroborate the testimony of scripture that God's eternal Power and Godhead are revealed by the things that are made, so that man is without excuse if he rejects the truth. Evolutionists find the existence of insect flight as thorny problem in their scheme of things. The fossil record helps very little, as the earliest fossil, believed to be of Devonian age, is a Collembolon, a wingless order well represented on the earth today; while the oldest fossils of winged insects are found in the Carboniferous. All of the winged fossils are fully winged, with no transitional forms.–

Alexander and Brown outline three principle theories for the origin of insect flight, then add a new one of their own. The first theory, the "flying fish" hypothesis was developed by Oken.[4] He believed that wings are homologues of nymphal gills of a primitive insect, as abdominal gills are sometimes locomotory organs. and they began to be used as gliding organs, when insects leaped out of the water to escape predators. No notal thoracic gills, however are present in juveniles of modern insects, and tremendous difficulties are evident in transferring a juvenile apparatus constructed to function underwater to an adult device used for locomotion in the air. The flying fish analogy is not serviceable, because insects are too small to break through the surface film in a similar fashion.

Forbes points to the fact that notum projects laterally in crevice dwellers such as cockroaches, millipedes, and silverfish.[5] He believes that these projections could have been enlarged sufficiently to serve as guiding planes affording a selective advantage in the form of dispersal and escape, and that muscles were introduced first to steer, and later to power these appendages. A major problem with this hypothesis is explaining how notal flaps could afford a selective advantage before they were large enough to serve as gliding planse.

The third hypothesis introduced by Wigglesworth[6] states that wings arose in tiny, passively airborne species to increase buoyancy during windborn dispersal, muscles appearing later to provide control during takeoff and landing, and then flapping flight. An argument againgst this hypothesis is that small insects such as aphids have such a small mass that active control of flight is virtually impossible. Drastic changes in structure would be necessary to make flapping, controlled flight a possibility. Also, it is not explained by this idea why wings are restricted to adult forms.

Alexander and Brown hypothesize insect wings arose as mating display devices.[3] They mention among other things that wings of the flightless red katydid and many Gryllids are used in stridulation, and also are lifted to expose thoracic glands from which the female feeds during copulation. They also point to the band-winged grasshoppers (Oedipondinae) which employ wing noises and display of brightly-colored underwings as mating behavior. Wings would thus have originally arisen as mating display devices on the male, and later have evolved a flying function. They also point to Paleodictyopteran fossils, which have fleshy pronotal lobes in addition to large meso- and metathoracic wings. They believe that the lobes took over an epigamic display function from the wings, once the wings had evolved a locomotory function. A problem with this hypothesis is explaining how the wings thus developed could be transferred to the female insect, and why the aforementioned tree katydids and Gryllids remain flightless if flight affords a selective advantage. Fossil evidence for the hypothesis is also lacking.

The presence of such differing theories of insect flight gives testimony to the fact that biologists are reluctant to leave any of the pages of the evolutionary scheme blank even when faced with meagre and conflicting evidence.[3] The fossil record lends so little support that entomologists are free to imagine anything about the origin of insect flight.[6] The fossil record, with its numerous examples of fully developed flying insects, and lack of transitional forms, testifies that God created the living things to reproduce their own kind (Gen. 1:24). The engineering marvel of insect flight is one of God's many works that display His wisdom (Psalm 104:24). Our understanding of God's role in creation and especially His creation of us human beings is linked with out need of the gospel. Rev. 4:11 states that God is worthy to receive glory, honor and power because He created all things and gives them their being. We are morally bound by God's creative ownership of us to bring Him glory and honor by obeying his law perfectly. In light of our rebellion against this imperative, how merciful it was of God to speak to us by His Son through Whom He made the universe (Heb. 1:2) to effect our atonement (Rom. 3:25)! When we behold the marvel of insect flight, we should rejoice that it displays God's handiwork and be humbly grateful that Christ the Creator (Col. 1:16) stooped so low as to provide salvation for those men of His creation who will call on Him.

References

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[3]Alexander, R.D., and W.L. Brown, 1963. Mating and the origin of insect wings.

[4]Oken, L., 1831. *Lehrbuch der Naturphilosophie*, ed. 2 Jena Fromann. (in) Alexander and Brown, *op. cit.*

[5]Forbes, W.T.M., 1943. The origin of wings and venational types in insects. *Amer. Midl. Nat.* 29: 381-405.

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Jupiter's Galilean Moons

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[9]Smith *et al.*, *op. cit.*, p. 962.

[10]Slusher, Harold S., and Thomas P. Gamwell, 1978. The age of the Earth: a study of the cooling of the Earth under the influence of radioactive heat sources. Creation-Life Publishers, San Diego.

[11]Smith *et al.*, *op. cit.*, p. 962.

[12]*Ibid.*, pp. 957-971.

[13]*Ibid.*, p. 969.

[14]*Ibid.*

[15]*Ibid.*

[16]Schefter, *op. cit.*, p. 57.

[17]1979. *Science News* 116, 181.