

THE TARANTULA (FAMILY THERAPHOSIDAE).^{1/}

W. H. WHITCOMB^{2/} AND H. V. WEEMS, JR.^{3/}

INTRODUCTION: IN THE AMERICAS THE TERM "TARANTULA" REFERS TO ANY OF ABOUT 300 SPECIES OF PRIMITIVE SPIDERS WITH POOR EYESIGHT BELONGING TO THE FAMILY THERAPHOSIDAE, SUBORDER ORTHOGNATHA, ORDER ARANEAE. ABOUT 30 SPECIES OCCUR IN THE UNITED STATES. MANY ARE AMONG THE LARGEST OF ALL SPIDERS, WEIGHING 2-3 OUNCES AND WITH A 10-INCH LEG SPREAD. THEY ARE TYPICAL MYGALOMORPHS (FIG. 1), GENERALIZED SPIDERS WHOSE MOUTH PARTS MOVE UP AND DOWN INSTEAD OF FROM SIDE TO SIDE AS DO MOST SPIDER CHELICERAE. THE TERM TARANTULA IS DERIVED FROM A CITY IN ITALY AND TRULY BELONGS TO A WOLF SPIDER OF THAT AREA, LYCOSA TARENTULA (LINNAEUS), WHICH IS ITSELF DEEPLY INVOLVED IN FOLKLORE. THE FOLKLORE WAS BROUGHT TO THE NEW WORLD BY IMMIGRANTS WHO, AS SOON AS THEY SAW SOME OF THE BIG SPIDERS OF THE AMERICAN TROPICS AND DESERTS, CALLED THEM TARANTULAS. THERE ALSO IS A GENUS OF TAILLESS WHIP SCORPIONS KNOWN SCIENTIFICALLY AS TARANTULA. HOWEVER, IN NORTH AND SOUTH AMERICA "TARANTULA" IS SO FIRMLY ESTABLISHED AS THE NAME OF THE BIG, HAIRY MYGALOMORPHS THAT THERE IS LITTLE CONFUSION IN THE USE OF THE TERM. THE RATHER LARGE, LONG-LEGGED, FAST-MOVING SPIDERS THAT ARE FOUND FREQUENTLY ON SHIPMENTS OF BANANAS COMING INTO FLORIDA FROM LATIN AMERICAN COUNTRIES...AND BELIEVED BY MANY PEOPLE TO BE TARANTULAS...USUALLY PROVE TO BE GIANT CRAB SPIDERS OF THE FAMILY HETEROPODIDAE. THEIR BITE, LIKE THAT OF THE TARANTULAS, MAY BE TEMPORARILY PAINFUL BUT IS ONLY VERY MILDLY TOXIC TO HUMANS.

BECAUSE OF THEIR SIZE AND FORMIDABLE APPEARANCE, TARANTULAS HAVE THE REPUTATION OF BEING DEADLY POISONOUS. SO FAR AS IS KNOWN, THIS IS NOT TRUE. THERE ARE NO VERIFIED RECORDS OF HUMAN DEATHS CAUSED BY A TARANTULA. THE SPECIES FOUND IN THE UNITED STATES ARE RELATIVELY HARMLESS TO HUMANS; HOWEVER, SOME SOUTH AMERICAN SPECIES HAVE CAUSED LOCALIZED TOXIC REACTIONS WHICH DISAPPEAR WITHIN 3 DAYS. SOME SPECIES HAVE KILLED BOTH WHITE RATS AND BIRDS IN EXPERIMENTS. WILLIAM BAERG TESTED 26 SPECIES, MANY OF THESE ON HIMSELF. OF 9 SPECIES HE INDUCED TO BITE HIM, ONLY 1 CAUSED AN OBSERVABLE REACTION. THE SPECIES BAERG TESTED WERE FROM VARIOUS PARTS OF THE TROPICS, AND MANY HAD BEEN THOUGHT TO BE POISONOUS. WHILE NOT ALL SPECIES HAVE BEEN TESTED SCIENTIFICALLY, IT IS INDEED QUESTIONABLE WHETHER THE BITE OF ANY SPECIES WOULD KILL OR SERIOUSLY INJURE A HUMAN. THE BITE MAY BE RATHER PAINFUL FOR A BRIEF PERIOD OF TIME, SINCE THE FANGS OF THE CHELICERAE ARE QUITE LARGE, BUT THE INJURY TO HUMANS IS LARGELY MECHANICAL, WITH LITTLE, IF ANY, NOTICEABLE TOXIC EFFECT. FURTHERMORE, TARANTULAS VERY SELDOM BITE HUMANS, EVEN WHEN HANDLED FREQUENTLY, AND ARE CONSIDERED BY MANY PEOPLE TO MAKE EXCELLENT PETS. BAERG (1958) WROTE, "TO ANYONE WHO HAS LEARNED TO KNOW THIS SPIDER, IT IS AS HANDSOME AS A GOLDFINCH AND FULLY AS INTERESTING."

THE DORSAL SURFACE OF THE ABDOMEN OF MANY NEW WORLD TARANTULAS, IN ADDITION TO A COVERING OF LONGER SENSORY HAIRS (FIG. 2), BEARS A DENSE COVERING OF SHORTER SPECIALIZED HAIRS CALLED URTICATING HAIRS (FIG. 3) THAT CAN PROVOKE INTENSE SKIN IRRITATION IN MAN ON CONTACT AND WHICH, PRESUMABLY, PROVIDE TARANTULAS WITH A DEFENSE AGAINST SOME OF THEIR ENEMIES. COOKE ET AL. (1972) PUBLISHED A DETAILED ACCOUNT OF THESE URTICATING HAIRS, DIVIDING THEM INTO 4 MAIN TYPES, BASED ON A STUDY OF MORE THAN 40 SPECIES OF TARANTULAS. THEY STATED THAT THE ROLE OF THESE MINUTELY BARBED HAIRS IN NATURE IS WHOLLY DEFENSIVE, APPARENTLY MOST EFFECTIVE AGAINST SMALL MAMMALS ATTACKING SPIDERS IN THEIR BURROWS. THE SPIDER DEFENDS ITSELF BY KICKING THE HAIRS LOOSE WITH ITS HIND LEGS. THIS EXPLAINS WHY MOST TARANTULAS KEPT AS PETS HAVE A BALD SPOT ON THE BACK OF THE ABDOMEN. PRESUMABLY THIS DEFENSE MECHANISM DOES NOT PROTECT THE TARANTULA AGAINST ITS ARCH ENEMIES, THE PEPSIS WASPS, WHICH SUCCESSFULLY ATTACK IT EVEN WITHIN ITS BURROWS, OR FROM PARASITIC ACROCID FLIES. COOKE ET AL. (1972) WROTE THAT THE URTICARIOUS EFFECT OF THE HAIRS SEEMS TO BE DUE SOLELY TO MECHANICAL IRRITATION, AND AT THE TIME IT WAS PUBLISHED THERE WAS NO EVIDENCE OF ANY CHEMICAL IRRITANT BEING INVOLVED. BAERG (1958) REPORTED THAT RUBBING THE BACK OF A TARANTULA AGAINST THE SKIN OF HIS FOREARM CAUSED ONLY A MILD IRRITATION THAT REMAINED NOTICEABLE FOR ABOUT AN HOUR, BUT THAT A SIMILAR TEST MADE ON HIS WIFE PRODUCED MORE MARKED RESULTS. SHE FELT A SHARP IRRITATION FOR SEVERAL HOURS; SUBSEQUENTLY THERE WAS A MILD ERUPTION OF THE FOREARM, APPEARING AT IRREGULAR INTERVALS OVER A PERIOD OF SEVERAL WEEKS. INTERESTINGLY, THE MINUTE DETAILS OF URTICATING HAIRS OF TARANTULAS, ONLY RECENTLY REVEALED BY THE ELECTRON SCANNING MICROSCOPE, PROVIDE RELIABLE CHARACTERS WHICH PROMISE TO BE OF CONSIDERABLE VALUE IN THE CONFUSED FIELD OF THERAPHOSID SYSTEMATICS.

DISTRIBUTION: TARANTULAS IN THE UNITED STATES ARE FOUND WEST OF THE MISSISSIPPI RIVER AND SOUTH OF A LINE RUNNING THROUGH THE MIDDLE OF MISSOURI, KANSAS, COLORADO, UTAH, AND NEVADA, AND THROUGH NORTHERN CALIFORNIA. THERE ARE SEVERAL RECORDS OF THEIR BEING FOUND ABOVE THIS LINE IN UTAH AND CALIFORNIA. THEY OCCUR IN MOST OF MEXICO AND SOUTH TO ARGENTINA, INCLUDING ALMOST EVERY SOUTH AND CENTRAL AMERICAN COUNTRY AND MANY OF THE ISLANDS OF THE CARIBBEAN FROM TRINIDAD TO CUBA. IN THE EASTERN HEMISPHERE, TARANTULA-LIKE MEMBERS OF THE FAMILY THERAPHOSIDAE ARE PRESENT IN EAST, WEST, AND SOUTH AFRICA, MADAGASCAR, AUSTRALIA, INDIA, CEYLON, AND OTHER PARTS OF ASIA. THE ABSENCE OF TARANTULAS FROM FLORIDA AND OTHER SOUTHEASTERN STATES IS SURPRISING, SINCE THOSE AREAS SEEM TO BE IDEAL FOR THESE HAIRY SPIDERS.

IN THE UNITED STATES TARANTULAS LIVE IN HOLES WHICH THEY DIG UNDER STONES, IN OPEN SEMI-DESERTLAND, AND IN HILLSIDES. THEY DIG THESE HOLES BY MEANS OF THEIR FANGS AIDED BY SPECIALLY ADAPTED PALPI; SOIL IS REMOVED AND DEPOSITED NEARBY. OCCASIONALLY THEY OCCUPY OLD RODENT BURROWS. TARANTULAS DO NOT LIVE IN COLONIES, SINCE THEY ARE CANNIBALISTIC, BUT THEY MAY BE FOUND IN GROUPS NUMBERING FROM A FEW TO 20 OR MORE, LIVING A FEW FEET APART BUT UNAWARE OF EACH OTHER. UNLIKE MANY OTHER KINDS OF SPIDERS, YOUNG TARANTULAS DO NOT DRIFT IN THE WIND BUT HAVE TO WALK AWAY AND MAKE THEIR OWN HOMES.

^{1/} CONTRIBUTION No. 375, BUREAU OF ENTOMOLOGY

^{2/} PROFESSOR, DEPT. OF ENTOMOLOGY & NEMATOLOGY, IFAS, UNIVERSITY OF FLORIDA, GAINESVILLE, FL 32611

^{3/} TAXONOMIC ENTOMOLOGIST, DIV. PLANT IND., P. O. Box 1269, GAINESVILLE, FL 32602

IDENTIFICATION: TARANTULAS ARE CHARACTERIZED BY HAVING 2 PAIRS OF BOOK LUNGS, CLEARLY VISIBLE ON THE VENTRAL SURFACE OF THE ABDOMEN AND NOTABLE FOR THEIR LARGE SIZE. VENOM GLANDS ARE CONTAINED ENTIRELY WITHIN THE BASAL SEGMENT OF THE CHELICERAE. THERE IS NO VISUAL EVIDENCE OF DORSAL SEGMENTATION OF THE ABDOMEN. NEARLY ALL HAVE BUT 4 SPINNERETS, THE HIND AND MEDIAN PAIRS; THESE ARE LOCATED CLOSE IN FRONT OF THE ANAL TUBERCLE. SPERMATHECAE OF THE FEMALE GENITAL SYSTEM ARE COMPLETELY HIDDEN BENEATH THE INTEGUMENT, AND NO TRUE EPIGYNUM WITH SEPARATE EXTERNAL OPENINGS HAS BEEN DEVELOPED. MALE PALPI ARE GENERALIZED, THE PRINCIPAL ELEMENTS BEING RELATIVELY SIMPLE WITHOUT CONSPICUOUS ELABORATION OR ADORNMENT. THE MAXILLARY LOBES ARE NOT AT ALL DEVELOPED IN THE AMERICAN SPECIES, BUT IN SOME EXOTIC FORMS A SMALL ANGLED SPUR OR A WELL-DEVELOPED PROCESS MAY BE PRESENT. Tarsi HAVE VENTRAL SCOPULAE, WITH 2 CLAWS, AND WITH TERMINAL CLAW TUFTS, OR TENENT HAIRS; THE THIRD CLAW OF OTHER MYGALOMORPHS IS LACKING OR OBSOLETE. THE LEGS AND BODY ARE CLOTHED WITH VELVETY WOOL AND LONG SILKEN HAIRS, AND IN ADDITION THE DORSUM OF THE ABDOMEN BEARS NUMEROUS TINY URTICATING HAIRS WHICH ARE REPLACED DURING THE NEXT MOLT.

LIFE HISTORY AND HABITS: TARANTULAS, UNLIKE MOST OTHER ARTHROPODS, MAY LIVE FOR MANY YEARS. FEMALES KEPT IN CAPTIVITY HAVE LIVED MORE THAN 25 YEARS; THEY HAVE SURVIVED ON WATER ALONE FOR ALMOST $2\frac{1}{2}$ YEARS. BASED ON THE STUDIES OF W. BAERG, THE PIONEER IN TARANTULA LIFE HISTORY STUDIES, MALES OF MOST SPECIES BECOME SEXUALLY MATURE AT APPROXIMATELY 10 YEARS OF AGE, FEMALES IN 10-12 YEARS. FEW MALES SURVIVE THE YEAR IN WHICH THEY BECOME MATURE; MANY DIE A NATURAL DEATH, WHILE SOME ARE KILLED BY THE FEMALE DURING COURTSHIP OR AFTER MATING. FEMALES AND IMMATURE MALES ARE ALMOST INDISTINGUISHABLE UNTIL THE FINAL MOLT OF THE MALE, AT WHICH TIME MALE CHARACTERS AND BEHAVIOR BECOME EVIDENT. FEMALES CONTINUE TO MOLT AFTER SEXUAL MATURITY AND THUS CONTINUE TO BE CAPABLE OF REGENERATING LOST APPENDAGES. MATURE FEMALES TEND TO LIVE PERMANENTLY IN ONE SPOT, WHILE IMMATURE MALES AND FEMALES MAY MOVE; ADULT MALES ARE ROVERS, AT LEAST AT CERTAIN TIMES OF THE YEAR. MOST OF THE TARANTULAS OBSERVED WANDERING IN THE OPEN ARE MALES, AND THESE USUALLY ARE SEEN ONLY DURING MATING SEASON. TARANTULAS IN THE DAMP RAIN FORESTS OF THE AMERICAN TROPICS FREQUENTLY LIVE ABOVE GROUND, AND AFTER HEAVY RAINS MAY BE SEEN WANDERING ABOUT IN THE OPEN; SOME ARE ARBOREAL. NORTH AMERICAN TARANTULAS SELDOM LEAVE THEIR BURROWS OR OTHER PLACES OF CONCEALMENT DURING DAYLIGHT, AND THEN ONLY FOR BRIEF PERIODS; THEY SELDOM MOVE MORE THAN A FEW FEET TO CAPTURE PREY, WHICH CONSISTS MOSTLY OF INSECTS, OTHER ARTHROPODS AND SMALL LIZARDS. THEY ORDINARILY STRIKE OVER A DISTANCE OF ONLY A FEW INCHES. FEMALES CONSTRUCT A SILKEN COCOON, OR EGG SAC. IN THE CASE OF DUGESIELLA HENTZI (GIRARD), WHICH IS COMMON IN ARKANSAS AND SOUTHERN MISSOURI, FEMALES DEPOSIT 500-1,000 EGGS. THEY WATCH OVER THE EGG SACS FOR 6-7 WEEKS, OCCASIONALLY BRINGING THEM OUT TO WARM THEM IN DIRECT SUNLIGHT UNTIL THE SPIDERLINGS EMERGE. THESE SPIDERLINGS OFTEN REMAIN IN THE BURROW OR "NEST" FOR SOME TIME AFTER EMERGENCE BEFORE DISPERSING IN ALL DIRECTIONS TO FORAGE FOR THEMSELVES AND ESTABLISH THEIR OWN PLACES OF CONCEALMENT.

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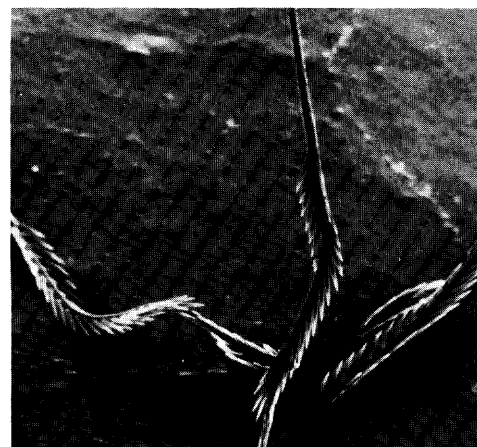
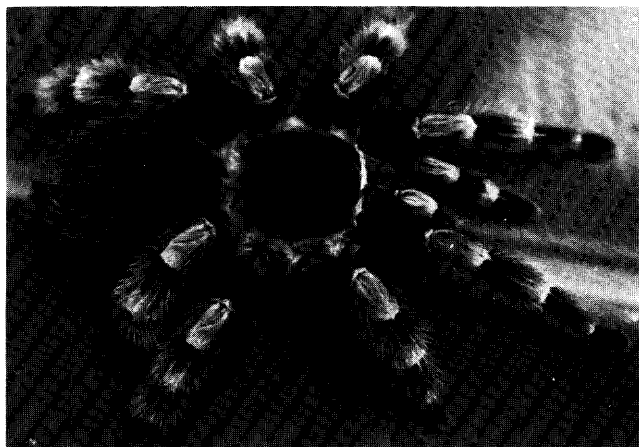


FIG. 1. BRACHYPELMA SMITHI (F. O. PICKARD-CAMBRIDGE), GOLDEN-BANDED TARANTULA

FIG. 2. SECTION OF A SENSORY HAIR, 2800X

FIG. 3. URTICATING HAIRS, 280X

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