color, while others are bright green. These insects resemble the green fly, or *Aphidæ*, in habits, sitting motionless on plant stems for long periods and feeding upon the sap. The manner in which the individuals of the present species are said to group themselves is very remarkable. The pink ones sit upon the lower

BROWN MANTID, FROM USAMBAVA, AT REST ON BARK.

part of the stem, while the green ones have their place above, toward the extremity. Further, the developing larvæ, which secrete long filaments of a waxy substance, and are quaint, fluffy little objects, sit beneath the pink individuals at the lowest part of the stem. Thus, the exact appearance of a spiked inflorescence is simulated. The fluffy larvæ have a distinct likeness to seed pods. The pink individuals might be mistaken for drooping flowers, while the green ones, higher up the stem, look like so many undeveloped buds. Prof. Poulton, however, has remarked that the grouping of green and pink insects in Prof. Gregory's observation was probably accidental.

So far, we have examined only instances of protective resemblance—instances, that is to say, in which the colors, or the colors and form, of an insect are seen to be of value to it as a means of escaping detection. We have now to consider cases in which the appearances of insects, while possibly screening them from the attacks of their enemies, have the additional advantage of enabling them to approach unobserved the creatures upon which they themselves prey. Such instances of resemblance may be termed aggressive.

The curious "praying insects," or *Mantidæ*, afford many striking examples of aggressive resemblance. The whole of this large family is insectivorous in habit, and the majority of the species are either green or brown in color. So that when sitting motionless among foliage, or upon the bark of trees, they are not only inconspicuous to such enemies as birds and lizards, but are also hidden from the small insects which form, in the main, their food.

The *Mantidæ* are almost all sluggish in their move-

ANOTHER VIEW OF SAME INSECT.

ments, seeming to be aware that the needs of their life will be best served by tranquillity, rather than by effort. They sit motionless in the sunshine—brown species upon bark, green species among foliage—and wait. At most, their activity consists in a stealthy stalking among the leaves until they come within striking distance of their victims. The first pair of legs in *Mantidæ* is useless for walking, but is wonderfully modified to serve as "clappers" for seizing prey. In the use of these limbs the insects are very rapid and dexterous, not only capturing insects which have settled upon a leaf, but even grasping them when actually on the wing. The rows of sharp spines with which the modified femur and tibia are armed make it impossible for the prey to escape when once the mantis has seized it.

It has been said that most of the *Mantidæ* are either green or brown in color. A few brightly-colored species, however, have been described. The colors may be restricted to a certain area or may suffuse the whole surface of the insect. And when these insects assume their characteristic attitudes among vegetation, these colors often give them a curiously flower-like aspect. Now, it is well known that highly specialized flowers rely mainly upon the aid of insects to secure cross-fertilization, and that honey is secreted as a bait to attract the winged visitors. It has, moreover, been dem-

onstrated that the colors and markings of flowers attract honey-gathering insects. Bearing these facts in mind, it is not difficult to realize that a quaintly shaped and brightly colored mantis, hanging motionless among green foliage, might, at times, be mistaken by other insects for a flower. That such mistakes actually occur has been vouched for by several observers.

Dr. Wallace mentions an insect (*Hymenopus bicornis*), discovered by Mr. Wood Mason, which attracts insects to their destruction by its flower-like shape

RAPTorial LIMBS OF A TYPICAL MANTID.

and pink or white color. Parts of the insect's legs are so flattened as to simulate the petals of the supposed flower. In this instance, the whole of the mantis looks like an orchid, but in the case of *Idolium diabolicum*, from Mozambique, a drawing of which is exhibited in the Natural History Museum at South Kensington, only the under surface of the thorax and fore-limbs

GONGYLUS GONGYLOIDES, FROM SOUTHERN INDIA.

have a flower-like color and form. The body, wings, and hind legs are greenish or brown, in harmony with the foliage by which they are partially hidden when the insect is lying in wait for a meal.

Perhaps the most authentic instance of alluring resemblance is that described on the authority of Dr. J. Anderson. The mantis is *Gongylus gongyloides* from Southern India—a species which has been known to naturalists for upward of three centuries, but of whose strange habits nothing was discovered until comparatively recent years. Living examples of *Gongylus* have been thus described: "On looking at the insects from above they did not exhibit any very striking features beyond the leaf-like expansions of the prothorax and the foliaceous appendages of the limbs, both of which, like the upper surface of the insect, are colored green, but on turning to the under surface the aspect is entirely different. The leaf-like expansion of the prothorax, instead of being green, is a clear, pale lavender-

PROTHORAX, RAPTorial LIMBS AND HEAD OF *G. GONGYLOIDES* IN FLOWER-MIMICKING POSE.

The insect is hanging head downward.

violet, with a faint pink bloom along the edges of the leaf, so that this portion of the insect has the exact

* *Proc. Asiat. Soc. Bengal*, 1877, p. 193.

appearance of the corolla of a plant, a floral simulation which is perfected by the presence of a dark, blackish-brown dot in the center, over the prothorax, and which mimics the opening to the tube of a corolla. A favorite position of the insect is to hang head downward among a mass of green foliage, and, when it does so, it generally remains almost motionless, but, at intervals, evinces a swaying movement as of a flower touched by a gentle breeze; and while in this attitude, with its fore-limbs banded violet and black, and drawn up in front of the center of the corolla, the simulation

G. GONGYLOIDES. RAPTorial LIMBS EXPANDED TO SEIZE PREY.

of a papilionaceous flower is complete. The object of the bright coloring of the under surface of the prothoracic expansion is evident, its purpose being to act as a decoy to insects, which, mistaking it for a corolla, fly directly into the expectant, saber-like, raptorial arms of the simulator."

A more perfect combination of protective and alluring resemblance than the above could hardly be conceived. The green coloring of the body and legs of the *Gongylus* harmonizes with the foliage among which it rests, and affords an effective hiding from the sharp eyes of insectivorous birds. The unusual shape and brightly-colored under side of its prothorax and fore-limbs constitute a lure, by means of which the mantis attracts to itself the smaller insects upon which it feeds.

BIOLOGICAL NOTES ON THE MERGING OF NOTABLE RACIAL CHARACTERISTICS.

By CARL F. GISSLER.

It is said that the English race is the most heterogeneous, the most complex in Europe. It must also be admitted, that the American race is more complex than the English, and therefore superior in scale. Most Europeans do not at all comprehend the uniformly great virility of the American race. Biologically viewed, the great function of the American nation is the gradual absorption of all European characters, including their various languages, manners, etc., into one great distinctive race, the American. The people of the United States, whether from Maine, New York, Alabama, Indian Territory, California, or any other section of this immense territory, although possessing

G. GONGYLOIDES. KEY DIAGRAM OF PROTHORAX, RAPTorial LIMBS AND HEAD; AND VENTRAL SURFACE.

Insect hanging head downward.

characteristics of thought, speech, voice, and manner somewhat peculiar to their own section, all have in common a distinctively American individuality; and in all cardinal motives, necessary to maintain and perpetuate the foremost principles of progress, for which a nation as a whole can stand at this time in the world's progress, the people are practically united. It is not so with Europe. In Austria, for instance, where there are several subdivisions and languages, there is almost constant strife between them. In Great Britain, the most heterogeneous element in Europe, the Celts are opponents everywhere.

Almost none of the various characteristics, such as gait, carriage of body, physiognomy, etc., of these Europeans is found in the first generation after immigration to this country. If at all present, for instance, in Pennsylvania, any such characteristics are weakened, becoming fainter in the second generation. If present, they are most conspicuous during adolescence, and more so in the male than in the female. Later on, in adult life, these characters become more or less evan-

escent. Generally, and very broadly speaking, there seems to exist in the physiognomy of the American, as accentuated in the male, a decided difference from that of the European. The features of the male American appear to be more rounded off, and the same is often true also of the female during adolescence. A mutation or change takes place, a sort of leveling out, as it were, of the European angularities of body and physiognomy. Such eccentricities as pertain to the length of the neck, the height of the forehead, the various prognathities, curve of back, length of the legs and arms, oddities in carriage, gait, motion in general, and many other general characteristics of the English female are thus leveled out.

These truths led to the exalted expressions of H. D. Howell, and numerous other critics, which amount in a certain sense to an apotheosis of the American female, and culminated in what the Europeans call, and is here termed in German "frauen cultus." In making a comparison, the British was selected; of the Canadians but a few notes were taken, such as pertain to those of British descent only. In Canada we notice higher foreheads and stronger transverse frontal wrinkles than those found even in the New England States.

As a matter of course, there is no morphological rounding off of the structural, bony skeleton of the skull. The hypothetical rounding off could be given a new name, but as J. Tyndall said, we should "avoid confusion by fixing the mind upon things rather than upon names," it was omitted.

In order to generalize the various American characteristics, the writer has numbered them, not however in accordance with their respective merits:

- a. Features rounded off and in other respects modified.
- b. The transverse frontal wrinkles of Europeans are generally wanting in the adolescent American female.
- c. The tone color of the American voice.
- d. The glistening sclerotic of the eyes of the American female.
- e. The less violent emotions in either sex.
- f. The quicker perception of thought.
- g. The American gestures.
- h. The American round handwriting.

a. Features rounded off and modified. The margins, the periphery of the entire front of the American physiognomy, are peculiarly rounded off. Observations of the scalp over the frontal eminences, the under and lateral parts of the chin, the upper part of the lower nose, the edges of the wings, and the expansions of the nostrils and septum, the entire *Platysma myoides*, or covering of the neck, with its adipose tissue, show that the periphery and angulation of all these anatomical parts of the European physiognomy have become more or less evolutionized, rounded off, as it were, in the American. From Mr. O. T. Mason, curator of the American National Museum at Washington, I learned but recently that Prof. Fred Starr, of the Chicago University, Ill., stated (Nov. 8, 1896, in the Chicago Times-Herald, which paper I could not obtain) a theory "that there is a tendency, growing out of natural conditions, for the whites who move to the American continent to assume more and more the aquiline features of the Indian." Prof. Fred Starr's studies (in answer to a letter to him last February) were the results of "studies and measurements made among the Pennsylvanian Germans." The Bertillon system as applied to measurements of criminals does not pertain to my treatise, from which the ears are excluded, since it is an established fact in criminology that attributed qualities often contain some inherited (atavistic?) and apparently indisputable stabilities. By including the ears and immediate surroundings in a treatise on human physiognomies, many grave errors are allowed to creep in with a whole chain of complications and incompatibilities, such as we notice in some magazine articles. The latero-posterior parts include the ear, such a stable element, as stable as the bony framework.

b. The transverse frontal wrinkles of Europeans are generally wanting in the adolescent American female.

This is a strong and generally acknowledged American characteristic, and often applies also to the younger males. As a rule, the wrinkles, when occurring, are more pronounced in those city people engaged in hard work or in factory life; such wrinkles are the most stubborn vestiges, holding on with great tenacity. The casual occurrence of fine, white, transverse frontal lines in young children born in Denmark, Ireland, England, Norway or Sweden, as observed by the writer, are undoubtedly inherited, and probably of luetic (syphilitic) or tuberculous origin, and as such are of diagnostic value in medicine. They are unlike those mentioned by Piderit, Gratiolet, or Darwin, which are acquired through habit as a permanent result of frequently repeated, transient, mimic actions of the *occipito-frontalis* muscle, that covers the upper head.

c. The tone color of the American voice. In the secret laboratory of Nature was evolved a physiological product in the vocal, laryngeal apparatus, which product was, as the writer remembers distinctly since the time of his arrival in America, thirty-five years ago, styled by his young acquaintance "colored voice." Those men were of American birth and Teutonic descent. At social gatherings it casually happened that doubt was felt as to the American birth of a few young men. The doubtful cases were then investigated a

little closer and the trouble soon discovered. It would require too much space to narrate all the interesting particulars found. The numerous vestiges left from the Teutonic stock in the first generation (taking up a narrow field of observation) led us to believe that the offspring from Switzerland, Alsace Lorraine, and Baden, contain the most obstinate elements as regards the quick assimilation of American characteristics. Great uniformity in the color of skin, hair and eyes was noticed. French beauty spots, flat-foot, lisping, tinge of yellow in sclerotic, peculiar pitch of voice, "defective whiskers," etc., are some peculiarities that appear even in the first generation. I surmise that this rather un-American tendency, this marked stubbornness, is due in the parent stock to the (former) inability to mix and intermarry with the more northern stock, and also to their geographical position along the French or Gallic frontier. As a matter of course, the tone color of the male American voice appears during adolescence, analogously with that of the European. However, the writer adds, that boys who immigrated early in life, often acquire almost, or quite, the same color of voice as if American born, and here again, though with some exceptions, the more northern the immigrant, the closer the approximation. The Jewish people evidently possess the quickest power of assimilation, the contrast between North and South being, in the writer's observation, even greater in that respect. The American female voice seems louder and higher than that of her European sister, but here my observations are very limited. The female voice of the European Celtic and British is well known as often guttural, which character is as a rule intensified when American born, and stronger, harsher in country than in the city people.

The rounding off of the American voice, and words, is also exemplified in that of the American negro, as Walt Whitman has pointed out, and we may add this is done with a more melodious effect, than in case of the normal voice of the white people in contrast with the European. The negro dialect is but a parallel, and cannot be misconstrued. Melanism (from *melas*, dark or black) as applied here in connection with sub-racial European pigmentation, appears to have some relation to musical rhythm. We remember small subdivisions in Europe, such as Hungarian, French, Turkish, Bohemian, Italian, Spanish music produced by peculiarly pigmented people, each of them endowed with a different musical air. The Teutonic, the so-called Anglo-Saxons, and the Americans are perhaps those that produce the least melancholic music. Congressman Broussard, of Louisiana, never spoke any English until he came to Georgetown University at the age of 15, and even now probably uses his mother tongue (French) with the greatest fluency. "It is a curious thing," said Mr. Broussard, "how the French language has remained the dominant tongue in my home country. Brought there by Acadians of Nova Scotia in the eighteenth century, it prevails to-day, and I believe it always will. Curiously enough you will find plenty of men in my district with such unmistakable English names as Jones, and Hayes, who cannot write or speak a word of English. Still funnier is the talk of the black people. Their negro-French would be unintelligible in Paris, and yet it is the softest, sweetest, most musical speech I ever heard from human lips. It knows no grammar, but it is the very essence of euphony and melody."—Washington Post. The voice of the American female, when past adolescence, gradually becomes nasal, with a sort of "twang." W. Whitman calls it offensive. My observations in this respect are limited, as I have never noticed the "twang" in the first generation of Germans; but I found that it can be forcibly imitated by German females who immigrated in infancy and who lived in society with so-called Yankees; therefore the writer classifies the "twang" as gregarious instinct or imitation from surroundings—simply a bad habit, like the peculiar South German "r." Among the latter it shows emotionality, and among the former a lack of this.

d. The more beautifully animated and glistening sclerotic of the eyes of the American female.

The sclerotic, or the white of the eye, has a faint violet tinge; the glistening is characteristic during the adolescent period. The violet tinge slightly changes in later years in the brunette type into a more yellowish hue. The luster of the eyes is also somewhat diminished at that period in both types, but in order to verify this, comparisons on a large scale are required. The glistening eyes of the American female are most conspicuous when viewed sideways. Occasionally we notice in strongly pigmented Jewish, Italian, and Spanish women a peculiar sharp luster in the eyes, but there is no semblance to the one of the American female. The concomitant motions of the ocular apparatus and surroundings constitute another difference. As the apes and other mammals do not possess a sclerotic, or white, in the eye, but the human eye only has this anatomical trait, and as the esthetological view of J. W. Powell and others is clearly the correct one, the superiority of the female American eye seems to be established. ("Esthetological" means a combination of esthetic and pleasure or attraction.)

e. The less violent, more considerate emotions in either sex.

In the normal state of health this holds good. Blushing, as it exists in Europe, is much less observed in this country. Miss Helen B. Thompson has proved by numerous psychological experiments that men are more emotional than women.

f. The quicker perception of thought, more to the point. The thought is not hampered, and is free from the traditions and prejudices of Europe.

g. The American gestures. These are a great improvement, not only on those few of the Anglo-Saxons and Celts, to say nothing of the sign language of Italians, and the myriads of the rest of Europe. The gestures are, in the writer's opinion, reduced in number for the reason that the more elaborately produced surface of the features in the American, together with other mutations, so functionate as to obviate the need of doing away with some of Europe's superfluous gestures. Since the Americans are not a sub-race of the Anglo-Saxons alone, the supposition of reduction of gestures from that factor solely is out of question.

h. The American round handwriting. The pleasing round handwriting of the male American, so seldom used among Europeans, is simply the result of the teachings in the public schools. There is no doubt as to the superiority of the round handwriting over the pointed, stilt-legged writing of the European script. In a certain way it can be compared with that of stylographic pen-writing, but this comparison is of course far from telling all. Bismarck stubbornly clung to this script, and if it had not been for him, the Germans would, like their Dutch and Scandinavian kin, together with the metric system, have adopted the Latin letters in their print and writing, thus gradually extricating themselves from the medieval ways introduced by obstinate monks. Prof. O. Weise's brochure, "Unsere Muttersprache, ihr Werden und ihr Wesen," says, on page 46: "Another thing is that we, unlike other nations, take upon us the burden of two alphabets, viz., aside from the stilt-legged, odd letters, so peculiar to the German form and manner, which in the course of time have been derived from the round Latin letters, we also use the letters that were prevalent during the middle age. If pedantry had never existed before, the Germans would have undoubtedly discovered it."

THE SCHEBLER AUTOMATIC CARBURETER.

The accompanying illustrations show an improved automatic carbureter of simple construction, and which has been found to give complete satisfaction to all automobilists who have adopted it. After a thorough test by the manufacturers, it is being placed

SCHEBLER AUTOMATIC CARBURETER.

on several of the leading American machines this year as part of the regular equipment.

As can be seen from the diagram, the carbureter consists of a gasoline chamber, B, through which passes an elbow pipe, C. A lid, L, fits tightly on the chamber, B, a tight joint between this and the elbow being made by means of a gasket, N. A dome-shaped pipe containing the auxiliary air valve, A, is bolted to the lid. This valve is so arranged that when it is completely closed, there is a small air passage past it, as shown. This makes increased suction at the inclined spraying nozzle, D, and causes the proper quantity of gasoline to be drawn into the motor in starting, when it is being turned over by hand. As the motor speeds up, the suction tends to increase. This causes the air valve to open, thus making a freer passage for the air and keeping the suction past the jet always approximately the same, with the result that the mixture is kept about the same at all speeds—a thing greatly to be desired.

The gasoline is maintained at the proper level in the

CROSS-SECTION OF SCHEBLER CARBURETER.

chamber by means of a horseshoe-shaped cork float, thoroughly shellaced and placed around the elbow. This float is attached to a long lever, which raises a needle valve, H, and shuts off the gasoline entering through O when this has raised the float to the proper level. The great leverage obtained to close the needle valve makes flooding of the carbureter from the valve not closing properly almost an impossibility. The needle valve, E, of the spraying nozzle is a substantial one with a large, straight handle. It can be readily set and locked in place. It is generally set about

* NOTE.—The term "race," or "nation," concerning the American people is but a phrase used at random by the writer. Zoologically considered, the Americans are a sub-species or a racial variety, a psychophysiological unit or entity, peculiar to the present population of the United States of America.