

THE COURTSHIP OF ANIMALS

JULIAN HUXLEY

Drawings by Herman Palmer

them thus imitating humanity, and throws something at once romantic and familiar into those dumb and hidden lives which they veil so closely from us. "One touch of Nature makes the whole world kin," we murmur, and find a new pleasure in the hackneyed words. They are really not quite apropos, however; for what we in our heart of hearts mean to say is one touch of buman nature. Man is a vain organism, and likes to stand surrounded by mirrors, — magnifying mirrors if it be possible, but at any rate mirrors. And so we read the ideas of our own mind into the animals, and confidently speak of "suitors" and "coy brides to be won" and "jealous rivals" and what not, as if birds or even spiders or newts were miniature human beings, in fancy dress no doubt, but with the thoughts of a twentieth century inhabitant of London or New York.

Some of the more reflective, perhaps, may wonder how far we are justified in our assumptions as to the motives and meaning of animal courtship; while others, with maybe some biological knowledge behind them, may try to look at it all from the other side of the gulf between man and beast, imagine how our own courtship would look to an external and dispassionate intelligence, wonder whether much of human behavior had better not be interpreted from the animal side rather than the animal's from



ours, and how much we are walled in by our biological heritage. Animal courtship is an unfashionable topic among biologists at present; and I do not exaggerate when I say that it is also one on which both ignorance and prejudice prevail. My own real interest in the subject began when, one spring in Wales, I observed the beautiful courtship of the red-shank, a common shore bird, and when I got back to libraries, could find no ordered account of it, or indeed of bird courtship in general. And now, after some fifteen years of reading and thinking about the subject, interspersed with a number of pleasant if strenuous holidays in England, in Louisiana, in Holland, in Spitzbergen, trying to find out what really does happen with this or that common bird, I can confidently assert that Darwin's theory of sexual selection, though wrong in many details, yet was essentially right: that there is no other explanation for the bulk of the characters concerned with display, whether antics, song, color, or special plumes or other structures, than that they have been evolved in relation to the mind of the opposite sex; that mind has thus been the sieve through which variations in courtship characters must pass if they are to survive.

Down at the base of the animal scale courtship of course does not exist. Jelly-fish or sponges or sea-urchins simply shed their reproductive cells into the water and trust to luck for fertilization. It is only when male and female must actually coöperate for fertilization to be effected, that we can expect to find courtship; and even so it will not exist unless there is a fairly elaborate brain and nervous system.

Perhaps the first adumbration of courtship is seen in the nuptial dances of certain marine bristle-worms (*Polychaetes*), in which at certain seasons of the year and phases of the moon the creatures swim up out of their crannies in the rocks and gather in groups, excited males wriggling round the females. It is possible that the presence of the dancing males in some way stimulates the females to lay their eggs, upon which the male elements are discharged in milky clouds. Snails too have a primitive courtship, which is complicated by the fact that they are bi-sexual and each in its rôle of male attempts to stimulate the other in its rôle of female.

But the first actions to which the name courtship, and not

merely perhaps direct stimulus to fertilization, must be given are those of a few crabs and most spiders. Among the Crustaceans, the fiddler-crab is characterized by the presence in the male of one enormously enlarged claw, which may weigh almost as much as the rest of the body, and is often brightly colored. It used to be supposed that with this the males stopped their burrows, or fought other males, or seized and carried off the females. However, the careful studies of Dr. Pearce show that its main function is one of display. In the mating season, when a female comes past, the males throw themselves into a tip-toe attitude, with big claw rigidly held aloft. If the female takes no notice, the male runs again to where she can see him, and again strikes the statuesque pose: if she goes too far, he returns to his burrow. The observer summed up his impressions thus: "One could only say that the males appeared to be displaying their maleness."

There we have the clue to the origins of courtship in a nutshell. Once the brain reaches a certain complexity, it controls behavior. A crab can react to various situations, — a food-situation, a hunger-situation, a fear-situation, a sex-situation; and the statuesque male with his uplifted claw is the sign and symbol of the sex-situation, just as the coming of a man or other large animal among the burrows constitutes an enemy-situation, with resultant scuttling. Doubtless even without such male advertisement, mating would eventually occur; but, as Darwin so clearly saw, the advantage may be to the male and not to the race, — the male who did not display himself as such would not get mated and would leave no descendants.

In the spiders, we find a very interesting difference between the hunters and the web-spinners. Among the former, who catch their prey by sight and stalking, males perform strange dances before the females, and often have the parts they thus display brightly colored. The latter are almost blind; and in them there are no dances, but the male comes up to the web of the female and vibrates one of the threads in a special manner, quite different from the vibrations made by trapped prey. In both cases it seems clear that the courtship's primary function is to indicate the existence of a "sexual situation". But here, to do so is a good deal more important than in the crab, for all the evidence goes to show that if this indication were not made, the female would simply treat the male like any other small living object, and—eat him! In many species she actually does so after the act of mating (and this occurs too in the scorpions); and in some others she is definitely hostile at first, while the male, who is usually much smaller than she is, is always obviously very ready to run away during the early phases of courtship.

In one hunting spider the male offers the female a nice fly, neatly wrapped in silk. If put in a box by himself with a fly, he will eat it; but if with a fly and a female, he will wrap and offer it; and if in a box from which a female has recently been removed, and in which her odor still presumably lingers, he will still wrap it, and search, like Shelley with his bouquet, "That he might

there present it! — Oh, to whom?"

In the carnivorous flies known as *Empida*, strange developments of the love-gift have taken place. In some species the male offers an unadorned carcass to the female. In others, however, the prey is stuck in the front end of a glistening "balloon", made of bubbles of viscous liquid secreted by the male, larger than his own body, and carried in his legs as he flies to and fro; doubtless this makes the "sexual situation" more conspicuous from afar. Finally, in a few species there has been a refinement. The balloon is there, but prey is no longer carried in it; instead, the males stick a leaf or flower-petal in it, — and indeed they will dart down and pick up any small conspicuous objects, such as fragments of paper, that you may choose to sprinkle on the surface



of the water over which they hover. Here, in quite a different evolutionary line from our own, we find quite definitely the employment of a non-utilitarian "present" as gift from male to female.

When we come to the vertebrates, matters become even more interesting, for it is among them, especially in the birds, that courtship and display

reach their highest elaboration. Only in a few fish is there much of a courtship, as would be expected from the fact that most species produce large numbers of eggs which are only fertilized after laying. In the Amphibians, the frogs and toads that make night



pulse with sound in the warm regions of the earth use their voices in the interests of reproduction; and if the grasshoppers were life's first instrumentalists, the frogs were the first vocalists.

The male frog, however, merely broadcasts an advertisement of his presence; it is among the tailed Amphibians that true display is found. Our common newts in the breeding season take to the water and develop a high fin all along the back and tail. This is much larger in the males, who in addition change their winter livery for one of brighter colors. They may also be seen performing their courtship, — actively moving in front of the females, often scraping up against them, all the time vibrating the bent tail. The strange fact about this procedure, however, is that they do not begin their display until after they have emitted their fertilizing elements. These are deposited on the bottom of the pond or aquarium inside a special packet or spermatophore, which the female must pick up for fertilization to occur; and courtship begins when this deposition is completed.

Here we see that display may have a racial function, adjuvant to successful fertilization, and not an affair between rival males. For even the most hardened Darwinian would hardly maintain, if two males simultaneously deposited spermatophores and then began their display before a female, that she, even were she to be better pleased or more stimulated by the display of one rather than of the other, would be able to remember which male had deposited which spermatophore; and of course unless the approved male were also to be the father of the young, his pleasing of the female could have no evolutionary effect. No: it seems clear that here the function of display has again to deal with the "sexual situation"; with the difference that it is not merely to advertise the male's presence and masculinity, but to generate a

sexual situation in the mind of the female. As a matter of fact, Finkler has by experiment shown that in the absence of a male's display, the female will not pick up spermatophores, so that this conception of courtship's function being to facilitate fertilization via the mind, by stimulating the mental mechanism into the right

phase, seems justified.

There is one species of bird for which Darwin's original theory has been definitely shown to hold good. That is the well-known shore bird, the ruff (*Mechetes*). In the winter the sexes are only to be told apart by size, but in the breeding season the males grow a magnificent ruff, — a tippet or collar, — round the cheeks and neck, and two fine ear tufts above. What is more, it is hard to find two males alike; not only do they develop different ground-colors in their plumage, but the collar and ear-tufts may either or both be of some special color or marking, one black, the other white; or chestnut, pepper and salt, buff, sandy, gray, sepia, and what not. Arrived at their breeding places, the males assemble at a definite spot, usually known as a "hill", though it may be but a dry area in the marsh. The females visit the hill from time to time, but the males never go near the nests out in the marshes, nor take any share in brooding or the cares of the young. On the hill each male usually keeps to a little private area of his own. When no females are present, the male birds will be dancing, whirring round like Dervishes, and sparring and jousting with each other. On the arrival of a female, the scene is changed. The males crouch down, immobile, sometimes flat on the ground with spread wings. The hen may simply preen herself, stroll round, and fly away again - on which the cock birds rise rather sheepishly from their prostrate posture, as if pretending that nothing had been going on. Or she may approach a male and nibble at the feathers of his neck, on which mating will be consummated.

Edmund Selous watched one particular ruff hill in Holland for weeks, arriving at his hide at or before dawn. Every male on the hill was distinguishable by his appearance; and so Selous was able to discover that some were more successful than others. One (a bird with a large and handsome ruff) was seen to mate almost as often as all the rest put together; while one or two birds were never successful while Selous was watching.

Here is Darwin's theory in practice, working itself out in every

detail, — the bright colors and special adornments developed only by the male and only in the breeding season, and used only in sexual combat and, especially, in sexual display; the male with no power to enforce his desires, the female completely arbiter of her choice; and, finally, the evidence that choice is exercised, since different males have very different fortunes, and must leave very different numbers of offspring. The only puzzling point is the extreme variability of the males. One can only suppose that what stimulates the female is not merely beauty and strangeness, but variety. Variety stimulates; therefore variety is preserved. From the point of view of the individual male, size and brilliance of ruff is the important factor; from the point of view of the group and race, variety of brilliance.

This clear-cut case is of importance, because it enables us to draw pretty definite conclusions in other similar cases. In the blackcock, for instance, a handsome member of the grouse tribe, there are similar assembly-places for mating, — veritable temples of Venus. Here the individual males cannot be distinguished, but each again appears to have his own definite pitch or stand, and, both from direct watching and by analogy with the ruff, it seems that here, too, there is true selection. Finally in the birds of Paradise there are also mating-places, but in the trees, where the

males dance and display their gorgeous plumes.

It is interesting to note that the evolution of such special mating-places with assemblies of males and visits by females has taken place at least three separate times in birds, — in the waders, the game-birds, and the birds of Paradise. The influence of mode of life on type of courtship is another problem that can be followed out in birds. Where there is polygamy and where the female alone broods the eggs and cares for the young, there we find the greatest disparity in color and courtship-behavior between the sexes. The female is generally drab, protectively colored; the male, per contra, brilliant, and alone participating in display. Since there is polygamy (or promiscuity), the successful male will imprint his characters on a larger number of descendants, and so display-brilliance will be at a premium. While, since he plays no biologically useful rôle after fertilization is once effected, there is less need for protective color, since it does not much matter whether he be killed or no.

Most birds are monogamous, however, at least for the season (or sometimes only for a single brood, — like the American wren, which as bird-banding experiments have shown, usually changes partners between the first and second broods of a single year). Most of the largest group of monogamous birds, the song-birds proper, have their whole sex-life hinge on what we may call the territorial system. They have their young hatched naked and helpless, needing abundant food for their growth, and liable to die of cold if left too long unbrooded. Hence it is necessary, first, for both parent birds to feed the young; second, for the presence round the nest of an area sufficiently large to supply the youngs' needs, and not trespassed upon by other food-seeking parents of the same species. This is ensured through an extension of the instinct, nearly universal among birds, to resent intrusion into the area round the actual or future nest-site.

Even in colonial nesters, like egrets or guillemots, the defended area exists, though it may be only a couple of feet across. In what we may call the true territorial birds, or birds with feeding as well as nesting territory, the course of events is as follows (I follow in this particular Eliot Howard's admirable description of the course of events in the European warblers or Sylviina). The males are first on the breeding-grounds. If the species be a spring migrant, the males generally migrate north a week or so ahead of the females. Arrived, they take possession of an area — a territory sometimes without dispute, sometimes after a fight with a simultaneous arrival or a bird already in possession. Then they begin their singing. Contrary to usual belief, the song of most songbirds is at its best not when it is being sung to the mate's ear, but before the mate has even arrived. As Howard has I think convincingly shown, the prime, though by no means the only, function of song is an advertisement. It is an advertisement of eligibly-occupied territory, one which serves the double purpose of attracting females and warning off other males.

When the females arrive on the scene, no immediate courtship on the part of the males is to be observed. If the female is alone, she simply takes her place in the territory, and the two are a pair for the season. Nature abhors a vacuum, and this particular vacuum, the absence of the female from a territory, is filled with the least possible fuss. If two rival females arrive together, it is they who fight for the possession of territory-plus-male, while he hovers about, an interested and even excited spectator, but without participating. Then follows the strange fact, which at first sight seems to upset the whole Darwinian apple-cart, namely that courtship and display now begin vigorously, - only now, after the two birds are mated for the season. The male vibrates his wings, spreads his tail, puffs his feathers, bows and scrapes, runs before his mate, often with a leaf or twig or other piece of nest material in his beak, and his antics may be so extravagant as to testify to the most ardent excitement within. How can this be fitted in with Darwin's view that these antics and displays have been evolved in large measure through the female's selection? To this, what we have learned from the lowly newt provides the answer. Courtship and display need not always have as their chief result the choosing of a mate. They may be, and indeed normally appear to be, accessory to the act of pairing and fertilization itself. The mind of a bird is a complex thing, and so is its life; the bird can not always be tuned to a sexual situation. The simplest way, it would appear, of ensuring that it is not always so tuned (with consequent excessive pairing), and yet of ensuring that both sexes shall be simultaneously ready to mate often enough, is that one sex — the male — shall be more constantly in the phase of sexual preparedness, and by his display shall both advertise the fact, and also help to stimulate the female to the proper emotional level.

Finally, there is possibly another and more direct biological



advantage in display. It appears that in seasons which have been inclement just before and during egg-laying, the number of eggs is often reduced and the percentage of infertility raised. It is also known that all the reproductive processes of birds are very much under the control of the higher, emotional centres of the brain. For instance, a female dove brought up in isolation from infancy will usually lay no eggs; but the presence of a male bird in a near-by cage, or even the caressing of her neck with a human finger in a way reminiscent of the caresses of the male's nibbling beak, will almost always cause an egg to be laid. It is further well known to bird-watchers that birds' emotions are very much at the mercy of the elements. If the weather be wet, cold, or windy, they mope and skulk.

Before leaving this group, mention should be made of the curious fact that in all-the-year residents who are also territory-birds, there is an "engagement" period in the spring. For some weeks after the pair are in possession of a territory, fertilization is not effected. The biological reason for this is plain, — it is advantageous for a bird to be on its territory early, or it may not find one; but it must not breed before a date which will give the probability of there being plenty of food for the young. The physiological machinery by which it is effected resides in the female; it is only at a certain season (probably depending on a certain mean temperature) that the eggs in her ovary start to grow rapidly, and

only then that her full sex-instincts arise.

Finally, we come to the large group of birds in which both male and female not only help look after the young, but also share in incubation and in the building of the nest. Such are the herons, the pelicans, the grebes, the divers, and many others. In them, neither parent is biologically the more precious; so that if protective color is needed, it is needed by both. Furthermore, their instincts have to be so similar in regard to nest, eggs, and young that the similarity, it appears, has spread to their courtship habits, too. For it is at any rate a fact that in a large number of this group of birds, and nowhere else, we find what we must call mutual courtship, — both sexes developing bright colors and special structures for the breeding season, and both using them simultaneously in a mutual display (which, as with other monogamists among birds, begins only after pairing-up).

Anyone who, like myself, has watched such birds by the hour day after day, must be struck by the fact of their enjoyment of the courtship ceremonies for their own sake, and the further fact that the ceremonies are often what we may call biologically selfexhausting, in that the birds' emotional tension is often liberated through them, instead of being stimulated and leading on to actual pairing. It would seem as if these strange and romantic displays, — head-shaking, or diving for weed, or aquatic dances breast to breast, or relieving guard on the nest with ceremonies of parade, or presentation of a twig with wings and crest a-quiver, — as if they constituted a bond between the two birds of the pair, binding them together so long as the breeding season lasted by emotional links. And after all, why not? Does not something similar obtain in human society? And does it not there play a valuable rôle, in cementing with love and joy the racially important edifice of the family? And if it has this value in man, why not in these birds, for whom too the cooperation of both parents for the good of the family is essential?

Here then we see display pressed, not merely into the service of one male against the rest, not merely facilitating fertilization, but into that of the super-individual unit, the family. And it is interesting that the family life of birds attains its highest development in these forms which have, we may say, "equal sex rights."

In yet other cases we see display becoming social, and courtship tending (as again sometimes in man) to be again diverted from its original character of individual wooing, this time toward the publicity of the dance. Among birds I myself have investigated, this is best seen in the oyster-catcher, the bold black and white shore bird, with red bill, sometimes known as sea-pie. Gatherings of eight or ten birds of this species may be seen in spring, all careering around together in their stiff courtship attitude with neck outthrust and long bill pointing vertically downwards, and a piercing noise of trilled piping issuing from their throats. Observation revealed that this is not only the commonest form of display, but the only one used while on the ground; that it may be employed by the male alone, or mutually by male and female together; and that in addition to its courtship function it expresses jealous hostility of other trespassing birds, whether trespassing on territorial or sexual rights. When, in a flock in early spring, courtship begins, other birds may join in the excitement; hostility reënforces love, and soon the whole number are careering round in frenzied excitement which is, it seems, neither sexual nor hostile, but social. Here the social dance appears to have little or no

special function, but is rather a biological accident.

Psychologically, one of the most interesting things about bird courtship is the frequency with which in display the birds will carry in their beaks a piece of the material of which their nest is built. This holds good even for the Adélie penguins, charmingly described by Dr. Levick. Here the nest is nothing but a rim of stones round a depression; and accordingly the male presents stones to his mate as part of his courtship. Interestingly enough, this action sometimes becomes diverted to serve other instincts and emotions, such as wonder, — the birds will present stones to dogs and to men; and Dr. Levick confesses to having felt quite embarrassed the first time he was the recipient! Still another tale hangs by these stones. The sitting birds are all the time stealing stones from each other's nests. Levick painted a number of stones different colors, and placed them at one margin of the nesting area. After this he could mark the rate of their progress (all by theft!) across the colony; and found that the red stones traveled much quicker than the rest. This is of great theoretical interest, for red is a color which is to all intents and purposes absent in the penguin's environment, — and yet they prefer it above all others. If a male penguin could grow a red patch he would probably be very quick to gain a mate.

Such an example also shows in what sort of way the extraordinary bowers of the bower-bird can have developed. These are a blend between art gallery and museum, usually a tunnel of twigs with a collection of shells, bones, berries, and flowers at one end. In one species a space of ground is cleared, and large leaves laid upon it, their silvery under-surface upwards. As they wither, they are replaced; if they are blown over, the silver side is turned

up once more.

Among the mammals, there is on the whole little courtship or display by the males, but correspondingly more fighting. This probably depends on the fact that the reproductive instincts of the female mammal are more rigidly under a definite physiological control, less under the fluid control of higher, emotional cen-

tres; the male deer or elephant-seal has but to guard his harem, and they will automatically accept him in due time. There is, however, a great deal still to be discovered of the courtships of monogamous mammals, — a difficult subject, because so many are nocturnal or burrowers, — but one that would well repay study. Among some intelligent quadrupeds, however, such as the elephant, a pleasant mutual courtship, of trunk-caresses, has been described; and when we move up towards *Homo Sapiens* and reach the monkeys and apes, we find a number of definite display-characters among the males. Some are to us repulsive, like the naked scarlet and azure cheeks of the Mandril, or the blue of Stevenson's

... blue-behinded ape that skips about the trees of Paradise.

But others, like the orang or some of the marmosets with their mustachios, or the Satan monkey with his fine beard, are curiously reminiscent of ourselves, and we are reminded of Mr. Hilaire Belloc's baboon—

The Big Baboon who lives upon The plains of Caribou,
He goes about with nothing on
— A shocking thing to do.

But if he dressed respectably
And let his whiskers grow,
How like that Big Bahoon would he
To Mister — So-and-So!



METHODISM

A Compendium of Significant Facts and Figures

ALL the fifteen branches of Methodism in the United States have come from the one stem. The evangelical revival in Great Britain in the eighteenth century reached America in the hearts of the emigrant members of the societies organized by John Wesley. He, his brother Charles, and George Whitefield were, humanly speaking, the inspirers, the leaders, and the embodiment of the movement.

By the latest authoritative statement the Methodist group within the United States shows a membership of 8,920,190. In this total five units account for 8,580,948. Of these, two major bodies, The Methodist Episcopal Church and The Methodist Episcopal Church South have in membership 7,050,018; the other three are colored

Episcopal Church, South, have in membership 7,050,918; the other three are colored churches, numbering 1,530,030. Ten bodies together have 339,242 members. If to its membership in the United States that in foreign lands is added, approximately

630,000, the total for the Methodist group would be 9,550,190.

The sequence of events gives the history in epitome. 1766, the first British Wesleyan Society in New York; 1769, Boardman and Pilmoor sent over by John Wesley as missionaries; 1771, Richard Wright and Francis Asbury appointed to America; 1773 (July 14) the first Methodist "Conference" in America; 1784, Thomas Coke ordained by Wesley with commission to ordain Francis Asbury, appointing them "joint Superintendents over our Brethren in America"; 1784 (December 24) the "Christmas" Conference in Baltimore, Coke and Asbury (the latter refusing appointment without election) elected Superintendents, and Asbury consecrated Superintendent by Coke, in pursuance of Wesley's authorization and election by the Conference: Adoption by this Conference of the first "Discipline of The Methodist Episcopal Church", including Constitution and Ritual; 1812, First Delegated General Conference; 1816, Organization of the African Methodist Episcopal Church; 1844–5 withdrawal of The Methodist Episcopal Church, South.

In organization The Methodist Episcopal Church has for its legislative governing body The General Conference, which meets quadrennially, and is composed in equal numbers of lay and ministerial members; for working units the Annual Conferences of which all ministers and they only, are members; The General Boards, — Foreign Missions, Home Missions, Education, Temperance and Reform, Hospitals and Homes, Pensions; for superintendence, the Bishops, with power to select as advisers, district superintendents, to assign pastors to churches, and, in general to supervise the work of the church, with special responsibility for that in the Conferences in the

Areas to which they are assigned by the General Conference for residence.

The Methodist Episcopal Church has a registration of over 5,000,000 scholars and teachers in its Sunday schools and over 725,000 members in its Young Peoples

Society (Epworth League). It has 30,000 churches and nearly 20,000 ministers. Its Publishing House (The Methodist Book Concern) by recent report shows sales for the last year of over \$5,000,000, and a capital of \$6,588,000. It has 78 hospitals under its auspices, providing over 7,300 beds, and representing property and endowment of more than \$30,000,000. Its Homes for The Aged number forty, with a capacity for nearly 2,000. It maintains forty-five Homes for Children, with a capacity

of about 3,000.

WHY I AM A METHODIST

FRANK MASON NORTH

Confessions of Faith — VII

OME college societies speak of "born men". They are the sons of former members. There is nothing gained by ignoring the fact that I was a "born" Methodist. Where heredity and environment reach an agreement the decision is apt to be final. There were Methodist history and tradition for two generations of ancestry on the one side, and on the other undisguised and active loyalty. When, at the age of eight, I made for my boy-self experiment of repentance for sin of which I felt personal guilt, and of faith in Jesus Christ as Saviour, in the way which had been from earliest childhood taught me, it would have been strange, had I not stepped through the church door which opened just before me. It is easy to see how I went into the Methodist Episcopal Church. I was reared at its threshold, and the doorsill was low enough for even a little fellow to step over.

But the question is not why I became a Methodist, but why I remained so; why I am a Methodist. The query put in this form is seen to be entirely pertinent when one recalls the large number of persons in the membership and the ministry of the other denominations who on suitable occasion will say, "Yes, I was myself once a Methodist." Of course, one admits that a brick once built into a wall, especially if the wall be broad and strong, finds it difficult to dislodge itself.

My earlier impressions of religious activity were not derived wholly from Methodist sources. It is in my boyhood recollection that interests outside the Church commanded the time and thoughts of those who most influenced me. New York was my birthplace and has been my home, or, as foreign missionary folk would say, my home base, for my entire life. The names of several of the existing philanthropic institutions of the city were with us household words in the days of their beginning. It was a Methodist environment, but into it came interests galore that bore other labels or no labels at all.

This study forces retrospect. It is matter of profound gratitude