

Scott Lang); the University of Glasgow (Prof. J. G. Kerr); the University of Aberdeen (Lieut.-Col. Prain); the University of Edinburgh (Prof. I. B. Balfour); the University of Durham (Prof. M. C. Potter); the University of London (Sir W. T. Thiselton-Dyer); the University of Manchester (Prof. Weiss); the University of Wales (Prof. Phillips); the University of Birmingham (Sir Oliver Lodge); the University of Liverpool (Prof. Herdman); the University of Leeds (Prof. Blackman); the University of Sheffield (Prof. Denny); University College, Nottingham (Prof. Carr); University College, Bristol (Prof. Lloyd Morgan); the Royal Swedish Academy of Sciences (Prof. Lönnberg); the Royal Society (Sir Archibald Geikie); the Society of Antiquaries (Lord Avebury); the Royal Irish Academy (Dr. Scharff); the Manchester Literary and Philosophical Society (Mr. C. Bailey); the Royal Society of Edinburgh (Prof. D'Arcy Thompson); the Geological Society of London (Prof. Sollas); the Cambridge Philosophical Society (Dr. Harmer); the Royal Astronomical Society (Mr. Newall); the Zoological Society (Mr. Boulenger); the British Association (Sir David Gill); the Entomological Society of London (Mr. Waterhouse); the Royal Microscopical Society (Lord Avebury); the Chemical Society (Dr. Horace Brown); the Malacological Society (Mr. Byrne); the British Academy was represented by Sir E. Maunde Thompson.

Dr. F. Darwin and Sir W. T. Thiselton-Dyer spoke on behalf of the universities and schools, and Prof. Einar Lönnberg and Sir Archibald Geikie on behalf of the academies and societies represented. Prof. Lönnberg announced that his gracious Sovereign, His Majesty King Gustaf of Sweden, had ordered him to convey to the Linnean Society his hearty greetings and sincere felicitations on this occasion. He also presented a very beautifully illuminated address from the Royal Swedish Academy of Sciences, and a silver copy of the Linnean medal of the Academy struck in commemoration of the Linnean celebrations of last year. Several other addresses were also presented by the delegates.

The concluding speech of the afternoon was delivered by Lord Avebury, who described, in an extremely interesting manner, his own intimacy with Charles Darwin, laying especial emphasis upon his peculiarly amiable personal character and upon the devotion shown by Mrs. Darwin to her husband and children. He referred to the quiet life at Down, and told the delightful story of one of Mr. Darwin's gardeners, who thought it was such a pity that his master had not got something to occupy him, for he wandered about the garden doing nothing, and would stand for as much as ten minutes at a time gazing at a flower!

After the afternoon ceremony, ninety of the fellows and their guests dined together at the Princes' Restaurant, the party including Sir George and Lady Darwin, Dr. F. Darwin and Mr. W. E. Darwin, while foreign biologists were represented by Profs. Hubrecht, Lönnberg, Strasburger and Warming. There were no speeches, and at nine o'clock the company adjourned to the rooms of the Linnean Society at Burlington House, where a reception was held by the president and Mrs. Scott. Two short lantern lectures were delivered during the course of the evening, one by Prof. Seward on "The Jurassic Vegetation of the World: a Study in Plant-migration," and the other by Dr. Smith Woodward, on "The Evolution of Mammals in South America." Various exhibits especially appropriate to the occasion were also shown in the library. Amongst these were a beautiful series of insects from the Hope collections in the Oxford University Museum, exhibited by Prof. Poulton and Mr. J. C. Moulton, in illustra-

tion of the phenomena of mimicry and variation. Other collections of insects illustrating special points connected with the theory of evolution were exhibited by Dr. Dixey, Col. Manders, and Dr. Longstaff; while Mr. R. A. Rolfe exhibited some beautiful flowers of natural hybrid odontoglossums with their parents.

We believe the Linnean Society intends to publish a full account of the proceedings, together with the addresses and speeches, which should form an extremely interesting record of a very impressive and memorable occasion.

A. D.

THE DAYLIGHT SAVING BILL.

IF anyone is in search of an object-lesson in the necessity for the introduction of some science into general education he will do well to give his attention to the proceedings in connection with the Daylight Saving Bill. He will probably find therein so much confusion of thought that he will feel some training in clear thinking to be imperatively demanded, though there is an off chance that he will be depressed beyond recovery by the contemplation of the report of the Select Committee on the bill which appeared in the newspapers on July 3.

To begin with the original short title—the Daylight Saving Bill—it will be conceded that no action of Parliament will produce any effect upon daylight. One may save gas or electric-light, and make more use of daylight, but to talk of "saving daylight" is metaphor intelligible enough for ordinary purposes, but not suitable for legislation. When a legislative act begins with metaphor it is not matter for wonder if it eventuates in allegory, and sooner or later that must be the end of the bill.

It would conduce to greater clearness if we knew exactly what is "the principle of the bill." It is designed to make every item in "the trivial round and common task" happen an hour earlier in the summer months than in the winter, but it does not propose that. It proposes the ingenious and apparently simple expedient of moving the clocks on an hour in April and back again in September, and it is assumed that the other will be a natural consequence. Whether the purpose or the proposal of the bill constitutes its principle has never been stated. The confusion of ideas is most insinuating; a person who approves of earlier hours in summer is quite likely to find himself committed to the "principle of the bill." When the Astronomer Royal was under examination before the Committee the confusion was most evident to the looker-on. The witness was definitely opposed to any alteration of the clocks, and yet seemed to suggest that the proposal of the bill should be referred to working men. The question that he wished referred was whether they desired to be made to get up an hour earlier in the morning than they do now—there is no such proposition in the bill—not whether the designation of a particular hour of the day should be five or six—but that is in the bill and nothing else.

Cross-examination by members of the Committee turned largely upon this confusion about the principle of the bill, and upon a further confusion of ideas between having different time standards in different geographical localities and different time standards in the same locality at different times of the year. The reasoning which implies that if the one is found to be practicable objection to the other must be merely indolence or conservatism would be really worth analysis at any time of the year except the dog days. Take an example under the bill. Standard Greenwich time is to be kept for astronomical and for navigation purposes, and standard Irish time is also to be un-

disturbed; but "local" time is to be established in Great Britain and Ireland an hour in advance of standard time. A steamer is announced to leave Dublin at half past twelve every night, Sundays excepted. What will the announcement mean?

There are already two interpretations. Only experience can tell whether it means 12.30 or 12.55 a.m. G.M.T.; but with the permission of the bill there will be four times which will be legal tender for this denomination, viz. 11.30 p.m., 11.55 p.m., 12.30 a.m., 12.55 a.m., G.M.T., and any one of them may be understood or misunderstood in the circumstances.

The tone of the Select Committee's report indicates that it thinks confusion between these four times will be obviated with a little practice, and if not, the number of people who travel from Dublin is so small compared with the number of those who do not that they can be disregarded.

Some ingenious advocate of the bill has endeavoured to justify it by a confusion of ideas which finds an analogy between the zone adjustment of standard time for longitude and changing the nominal hour of noon as an adjustment for latitude. The double-edged nature of the false analogy appears to have been overlooked. If sunrise is earlier, sunset is later, and if 11 should be called 12 on account of the earlier sunrise, *ex equali* 1 should also be 12 on account of the later sunset; this kind of argument, hollow as it is, has misled a newspaper, generally intelligent, into the grave error of accusing Scottish clocks of "lying" because the time of sunset in the far north, as recorded by them, differs by an hour from the scheduled time of sunset for Greenwich! What sort of clock would the leader writer of the *Westminster Gazette* prescribe to tell the truth in latitude 70°, where at certain times of the year there is no sunrise and at others no sunset?

There is a further delightful confusion about the bill not being compulsory which enables its advocates to ride away from all sorts of difficulties by explaining that if you find it inconvenient you can use Greenwich time as now. In the report they dispose in that way of the difficulties of American business as well as those arising in connection with astronomical, nautical, and scientific work. Any occupation which uses self-recording instruments can also be disposed of quite easily by calling it scientific and allowing it the liberty which, according to the promoters, is not infringed by the act.

What does this liberty mean? By establishing "local" time without compulsion, are either or both local time and Greenwich time to be legal? And if so, at whose option? May the North-Western Railway adopt the act and the Midland decline? And must the option be exercised once for all at 2 a.m. on the third Sunday in April? or can any person change his mind afterwards? Can anyone legally claim to go to business by Greenwich time and then revise his opinion and demand to leave by local time? Possibly the advocates of the bill are acting upon the assumption that the convenience of the new time will assert its own compulsion as Greenwich time has done, in every town in Great Britain except the ancient city of Canterbury. If it does it will be for some other reason than that which has been so effective in the case of Greenwich time.

The confusion is worse confounded by the report of the Select Committee. The new time is to be called local time, and the short title of the bill is changed; it is now called the "Local time (Great Britain and Ireland) Bill." What kind of confusion are we in now! We thought we knew what local time meant. But between the third Sunday in April and the third Sunday in September we are to have the option (there is

no compulsion in the bill) of keeping our clocks at local time, and then 5 p.m. as by law "established" will be, we suppose, five hours after local noon, or should it be five local hours after noon and four, or is it six, hours after Greenwich mean noon? Local time must not be confused with middle European time, though the figures will be identical; that is disapproved by the report.

After an elaborate inquiry, which included a prolonged consultation with the Astronomer Royal, the Committee seems to have lost sight of the fact that local time has already a perfectly definite meaning, and connotes a time measurement based on "local noon," which is late on Greenwich noon, not an hour in advance of it, as the revised bill declares, for nearly all places in Great Britain and Ireland.

It seemed incredible at the outset that serious men of business should really confuse themselves between altering the clocks, which was the proposal, and altering the time of occurrence of events, which was the purpose. It seems more certainly incredible that after prolonged inquiry the Committee should have failed to understand that local time has already a meaning, and cannot, even by Act of Parliament, be made to connote middle European time during the summer months. Yet that is the effect of the bill in its revised form.

If this new definition of local time is final, the report, which originated with metaphor, cannot, after all, be more than allegory; but what lesson the allegory is intended to convey is still a mystery.

What has tickled the fancy and captivated the imagination of the advocates of the measure is that since the introduction of telegraphs and standard time the control of clocks from Greenwich is so completely organised that its very existence is unknown to, perhaps, ninety-nine people out of a hundred, who have come to regard clocks as final timekeepers instead of Greenwich mean time. If this control, which works so smoothly and so surely, were modified so as to make clocks skip an hour in April, every subsequent event would be made an hour earlier, and yet we should be using the same Bradshaw and the same Postal Guide. The apparent simplicity and the completeness of the operation are very attractive. But one would suppose that the operation would at least require the connivance and active assistance of the controllers of all the clocks, certainly those of all the public clocks in Great Britain and Ireland. That the promoters know to be impossible, so, by the bill, the change is imagined to take place—it cannot actually take place—in the deadest of the dead of night, when there will be practically nobody to see that the clocks are not moved. This, again, is curious in an Act of Parliament. To prescribe that a certain operation shall take place at a time which has been selected because presumably there will be fewer people in a position to carry out the order than at any other time, is fine allegory but bad legislation.

Herein is further confusion of ideas arising from the notion that if an order is given to alter the clocks subsequent events will be thereby accelerated. Subsequent events may be accelerated, but it will be in pursuance of orders to accelerate them. It is inconceivable, for example, that such a body as that which controls the North-Western Railway will be content to alter the clocks in the dead of night and expect all subsequent events advanced an hour without express orders given to everybody concerned to accelerate by an hour whatever he has to do on Sunday, or for the large majority on Monday morning. In that case it is clear that the operative cause lies in the orders given, and not in the alteration of the clocks, which is a mere trivial circumstance, and might be omitted with-

out any diminution of the effect of the orders. In like manner you may inform a post-office official that you are going to alter his clock to-morrow morning, but unless you make it clear to him at the same time that he has got to be at work an hour earlier he will certainly regard your time-keeping with aloof interest. Anybody who has the real authority to order the day's work to begin earlier will not care much about altering clocks.

Nor is it likely, as the Committee seems to think, that because Parliament may decide to change the denomination of the hours they will thereby change the meaning of all the statutes in which hours are mentioned. To assume that public houses will regard themselves as closed an hour earlier because the clocks are moved leaves out of account the ingenuity of those who are affected. Our lawyers have not altogether lost their cunning; indeed, the bill might have been promoted by one of that profession, for there will be delightful opportunity for argument as to whether 12.30 a.m. "local" time (= 11.30 p.m. G.M.T.) is to-day or yesterday, and as to which of the two 12.30's is in the forenoon. What, indeed, shall we do with such appendages as noon, a.m., and p.m.? Will the denominations run 11 a.m., 12 a.m., 1 noon, 2 p.m., and so on? If so, 12.15 a.m. might become quite an interesting time for a lawyer.

Into this whirl of confusion of ideas it seems hardly safe to entrust a few timid scientific considerations. That we should have a system of keeping time under which, in spite of all principles of continuity of measurement, the numbers between 2 a.m. and 3 a.m. on the third Sunday in September will be travelled over twice, and the same numbers will have different meanings, would be roughly brushed aside by the remark that as nothing happens between 2 and 3 on the third Sunday in September it does not matter. It is the bold assurance of knowledge of the important and the unimportant which strikes the cautious scientific observer with a cold shudder. On the staircase leading to the committee room where this document has been evolved there is an inscription to the effect that copies of the imperial standards of length and weight are built into the wall to make sure that they shall never again be lost through fire. Reading this in passing, one carries away an impressive idea of the sanctity of standards, to find that in the committee room such an idea is regarded as quite early-Victorian. If it would make things more comfortable for a majority of the electors to have an inch off the standard yard, why not have it off? The yard is there; you have only to dig it up. There is no difficulty about it. Those people who would be inconvenienced can use the old yard if they like, and, anyway, they do not count.

What is true of the immured standards, the result of prolonged labour of a Royal Commission, is equally true of the time standard which represents generations of eminently successful work at the Royal Observatory. Yet how can one convey to legislators that a fluctuating standard is unscientific, and that by scientific one means suitable for general acceptance, and for permanent use, and not merely suitable for a few persons of special occupation and training? Are they only to be convinced by the method of trial and failure, the crudest, the most childish of all methods, that the relations of science and practical life are indescribably numerous; that if they adopt a scheme of time designation that has no scientific basis it must result in failure, however bold its promoters may be in rejecting eighths or neglecting quarters: that the advance from the "local" time of fifty years ago to "standard" time of to-day was a step well thought out, and one that cannot be reversed by the introduc-

tion of a new and really nondescript time under the old name?

Of course, there remain the great salient objects, the earlier hours of work in summer combined with the undisturbed Bradshaw and the continuity of the Postal Guide. Compared with these the continuity of time measurement is dismissed as a slight matter of no importance to practical people, a piece of scientific pedantry. But let it be remembered that the whole structure which Bradshaw and the Postal Guide represent has been reared upon the basis of an unalterable standard time, and that not even the most experienced legislator can follow out the consequences of taking out the corner-stone of that structure.

In the meantime there is plenty of room for the activity of reformers in the direction of earlier hours. It may be noticed that a large majority of workers, both in town and country, whose work does not depend upon facilities for correspondence, already commence work at 6 a.m., and for them noon is the central hour of the day. The latest people are the office people, who wait for their letters to be sorted. In these days of competition, if there is an early worm anywhere the early bird will not be very far off, and attendance is governed by facilities. It is a curious fact that, although early train facilities are so plentiful and so cheap, except on Sundays, that many clerks come to London in advance of their business hours because they can take advantage of them, there are only two post offices in the London area open for the transaction of telegraphic business before 8 a.m. on Sundays and barely a dozen on week days; in the country districts there are none. Early telegraphic facilities are formulated upon quite the opposite principle from that of workmen's trains; they are very expensive. Yet anyone blessed with a neighbour who is engaged in having his house built, altered, repaired, or painted will be aware that 8 a.m. is a very belated shot at the commencement of the working day. The conclusion that one comes to is that the number of people for whom postal and telegraphic facilities are matters of business, and who therefore keep late hours, are relatively few. To change the hour of work for the millions who begin at six in order to give the thousands that begin at 10 an extra hour of daylight, which is already theirs if they like to use it, seems no more reasonable than to disregard the requirements of Continental correspondence, as the Committee does, because it is only one-eighth of the whole.

Finally, there is another quite interesting confusion of ideas about the purpose of the bill. Its promoters are sanguine that when it is passed there will be longer use of daylight for outdoor sports and exercise with the same time for work, recreation and sleep as before, and yet the day is to remain twenty-four hours.

For most people the days are pretty full already. "Six days shalt thou labour and do all that thou hast to do" is a commandment which many people find it very hard to keep. To put in an extra hour's occupation in the day would not be possible for them. To make up for the light hour saved, a dark hour ought to be cut off.

When the bill is in operation there will be exactly the same interval between leaving off work and the commencement of the "halls" as before. If the workers take advantage of the extra hour of daylight for open-air recreation, which comes to them as a sort of free gift by a manipulation of the clocks, it is much to be feared that there will arise a strong temptation to crowd the day, already so overcrowded that no time is left for such an occupation as reading, with an additional hour of glorious life reckless of the loss of

health and strength that, in the long run, follows insufficient sleep. In spite of the prolonged inquiry, the Committee's proposal, although it is ostensibly an appreciation of daylight, appears to many persons, and those not all indolent or conservative, to be nothing more or less than a proposal for a leap in the dark.

WOMEN AND THE FELLOWSHIP OF THE CHEMICAL SOCIETY.

THE women, like the Peris at Heaven's Gate, have knocked at the door of the Chemical Society and have asked to be let in. Their request, as will be seen from the correspondence which we print below, has been referred to the whole body of the fellows, and there are those among them who are much perturbed in consequence. The more excited ones, we understand, are all for banging, barring and bolting, unmindful of the portents that a banging, barring and bolting policy is nowadays a bit discredited. Others, and we trust, for the fair fame and credit of the society as a scientific organisation, that they are the majority, are of opinion that the time has come when its fellowship should be rendered accessible to women. At least, so say the 312 fellows (including 10 past presidents, 12 vice-presidents, and 29 members of council, past and present), among whom are 33 Fellows of the Royal Society, and the heads of the chemical departments of nearly all the most important universities and colleges in the kingdom, who have now moved the council, by the most influentially signed memorial that body has ever received, to consent to the referendum.

It is difficult to know on what grounds the admission of duly qualified women to the society should be refused. Those who desire admission have been adequately trained in science, and most of them are graduates. They are, as pointed out by Sir Henry Roscoe in a letter to the *Times* of July 3, *de facto* chemists, engaged either as lecturers or demonstrators of chemistry in various schools or colleges throughout the country; some of them act as research assistants to professors of chemistry, or cooperate with them in the work of original inquiry; one or two are employed as works-chemists. The objects of the Chemical Society are defined to be the promotion of chemistry, and of those branches of science immediately connected with it, by the reading, discussion, and subsequent publication of original communications. It cannot be denied that women have contributed their fair share of original communications. Indeed, in proportion to their numbers they have shown themselves to be among the most active and successful of investigators. The society consents to publish their work, which redounds to its credit. Why, then, should the drones who never have done, and never will do, a stroke of original work in their lives be preferred to them simply because they wear a distinctive dress and are privileged to grow a moustache?

The women-chemists will doubtless smile at the futility of the adverse arguments which appear above the names of the two honorary secretaries of the society. They will have their own opinion concerning the arduous nature of chemical work, about which they know quite as much as those who profess so tender a solicitude for them. As to their chances of success in life, they have shown that they are quite able to hold their own, in spite of the alleged "overcrowded state of the profession." Overcrowded state of the profession, forsooth! With a delicious but wholly unconscious *naïveté*, the banging, barring and bolting people have herein revealed the true inwardness of their opposition. It is the argument of the weak-kneed—of persons whose *Zunftgeist* has warped

their judgment and disturbed their mental balance. We trust the main body of the society will treat the argument with the contempt it merits. It is astonishing how unscientific some so-called scientific persons can be. Apparently they fail to perceive that this request on the part of qualified women to be permitted to share the benefits and material advantages which arise from the cooperation of scientific workers in a common calling is the natural and logical result of affording women facilities for the cultivation of science in practically every university in the country. The study of science, even professionally, is no longer the exclusive prerogative of men. It was inevitable that among the many hundreds of women who are now passing through these universities, or through colleges in close association with them, there should be some who are attracted to science as a calling, or who should find in its pursuit a congenial occupation. They are surely entitled to make their own choice of their life's work. Why, then, should obstacles be thrown in their way? They ask for no favour—only for fair play and fair treatment, and it is the banging, barring and bolting people who, from unworthy motives, would deny them both.

A perusal of the correspondence which we publish below, and especially of the significant letter of the past presidents of the society accompanying the memorial addressed to the council which they have caused to be distributed to the fellows of the society, indicates pretty clearly to what lengths certain individuals are prepared to go in resisting the claims of the women. The memorial, it will be seen, expressed the personal opinion of the 312 signatories that the time had come when the fellowship should be rendered accessible to women, but that weighty fact is not mentioned in the letter which appears above the names of the secretaries. This was neither fair to those who signed the memorial nor to the women whose cause they had taken up. It is possible that this *suppressio veri* was unintentional, nor is it likely, we imagine, that there is any *arrière pensée* in the redundant words to which the past presidents direct attention and which serve only to confuse the issue. But those who drafted the letter and the accompanying ballot-paper must at least be held responsible for the bungling, maladroit manner in which the matter was presented to the fellows. It is a question for the society whether its true interests would not be better served by the transference of its secretarial business to more competent and more judicious hands.

Letter from the Secretaries of the Chemical Society to the Fellows.

BURLINGTON HOUSE,
PICCADILLY, W.

June, 1908.

DEAR SIR,

The Council of the Chemical Society have received a petition praying for an inquiry as to the views of the Society as a whole on the question of admitting women to the Fellowship.

Accordingly, the Council invite very careful consideration of the following brief statement of the chief arguments which have been used both for and against the admission of women.

It is proper to point out that the Council were advised on a former occasion by Counsel that there is some doubt whether, under the existing Charter, women are admissible as Fellows; it is also well to remember that if admitted to this status, women would be eligible, like other Fellows, for a seat on the Council and to hold office.

Those who support the view that steps ought to be taken in order to provide for the admission of women to the Fellowship point out—

(1) That the petition has been signed by 312 Fellows (including 10 Past Presidents, 12 Vice-Presidents, and 29