army, free from epidemic and communicable disease, from 100,000 men to a million. "Preventive medicine has made it possible to maintain 20,000,000 men under arms and abnormally free from disease, and so provided greater scope for the killing activities of the other military weapons. . . . Whilst the surprise effects of chemical warfare aroused anger as being contrary to military tradition, they were minute compared with those of preventive medicine. The former slew its thousands, whilst the latter slew its millions and is still reaping the harvest." This argument carries no conviction. Poison gas is not merely contrary to European military tradition; it is repugnant to the right feeling of civilised humanity. It in no wise displaces or supplants existing instruments of war, but creates a new kind of weapon, of limitless power and deadliness. "Mustard gas" may be a comparatively innocuous product as lethal substances go. It certainly was not intended to be such by our enemies. Nor, presumably, were the Allies any more considerate when they retaliated with it. Its effects, indeed, were sufficiently terrible to destroy the German *moral*. The knowledge that the Allies were preparing to employ it to an almost boundless extent was one of the factors that determined our enemies to sue for the armistice. But if poisonous chemicals are henceforth to be regarded as a regular means of offence in warfare, is it at all likely that their use will be confined to "mustard gas," or, indeed, to any other of the various substances which were employed up to the date of the armistice? To one who, after the peace, inquired in Germany concerning the German methods of making "mustard gas," the reply was: "Why are you worrying about this when you know perfectly well that this is not the gas we shall use in the next war?"

I hold no brief for preventive medicine, which is well able to fight its own case. I would only say that it is the legitimate business of preventive medicine to preserve by all known means the health of any body of men, however large or small, committed to its care. It is not to its discredit if, by knowledge and skill, the numbers so maintained run into millions instead of being limited to thousands. On the other hand, "an educated public opinion" will refuse to give credit to any body of men of science who employ their talents in devising means to develop and perpetuate a mode of warfare which is abhorrent to the higher instincts of humanity.

This Association, I trust, will set its face against the continued degradation of science in thus augmenting the horrors of war. It could have no loftier task than to use its great influence in arresting a course which is the very negation of civilisation.

The British Association at Edinburgh.

ABSTRACTS OF PRESIDENTIAL ADDRESSES.

THE presidential addresses delivered at a meeting of the British Association are now published in volume form, thus providing a convenient annual record of authoritative thought and opinion upon a wide range of scientific subjects. The title of the volume just issued is "The Advancement of Science, 1921"; the publisher is Mr. John Murray, and the price 6*s*., or to members attending the Edinburgh meeting 4*s*. 6*d*. The address of the president of the Association, Sir Edward Thorpe, is also on sale separately, price 1*s*. Following our usual custom, we print this address in full in the present issue, and we hope, in succeeding issues, to publish the parts of addresses of presidents of sections of interest to scientific readers generally. The subjects dealt with in these addresses are described in the subjoined abstracts.

PROBLEMS OF PHYSICS.

In Section A (Mathematics and Physics) Prof. O. W. Richardson will review in his address the present state of a number of leading problems now engaging the attention of physicists. After a brief reference to relativity, the far-reaching importance of the discoveries relating to the nature of the nuclei of atoms being made at Cambridge by Sir Ernest Rutherford will first be emphasised. The conditions which govern the emission of electrons by matter will then be considered broadly. This involves a review of the present state of our knowledge of thermionic emission and of photoelectric action. These two groups of phenomena are shown to be very closely, perhaps inseparably, connected. Nevertheless, the claim that thermionic emission is merely a manifestation of the photoelectric activity of a body under its own thermal radiation will not withstand a critical examination. The same is true of the wider claim which has been put forward that all chemical action is a similar and immediate effect of radiant activity. There is not, in either case, enough radiation to produce the observed results. The controversy which has lasted more than a century as to the origin of contact potential differences will be referred to, and it will be shown that the new phenomena supply the material required to settle this dispute. All three groups of phenomena are, in fact, closely related, and have undergone similar vicissitudes. In conclusion, attention will be directed to the rapid unification of light and X-ray phenomena as the result of recent investigations.

CHEMISTRY AND LIFE.

Four years of warfare having given the public some insight into the relation between chemistry and industry, with perhaps undue stress on utilitarian aspects of the science, it appears desirable to emphasise also the fundamental part played

by chemical principles in the commonplace operations of daily life. This is done by Dr. M. O. Forster in his presidential address to Section B (Chemistry), entitled "The Laboratory of the Living Organism."

Illustrations are drawn from the marvellously interwoven stages of digestion and assimilation, from the purely chemical potentiality distinguishing animals from plants, and from the chemistry of the nucleic acids, the constitution and degradation of which have now been clarified by researches extending over the past fifty years. The present state of knowledge embracing chlorophyll and hæmoglobin is discussed, and is followed by a survey of the anthocyans, the pigments of blossoms and fruits. Attention is directed also to the diverse activities of micro-organisms and the need for systematic inquiry into the capabilities of those humble practitioners of the chemical art.

It is claimed that, by simple readjustments, the general scheme of secondary education could be made to include the principles of chemistry, physics, mechanics, and biology in quantity sufficient to render all intelligent citizens able to recognise, at least superficially, the miraculous transformations in which they take part, and which surround them on every side. Such a result would not only add enormously to the æsthetic value of life, but would provide the sympathetic and intellectual background for those who will, in the near future as history counts time, be called upon to surmount the real danger with which civilisation is threatened, namely, the continued failure of governments and people to realise that the worst enemy of man is Nature ignored or misunderstood, whilst his best friend is Nature studied and controlled.

EXPERIMENTAL GEOLOGY.

Dr. J. S. Flett's presidential address to Section C (Geology) deals with the subject of experimental geology. Of recent years a great and increasing amount of research has been done in determining the behaviour of molten silicates and other minerals when they are cooled and allowed to crystallise. By means of the electric furnace such experiments are now comparatively easy, and the electric pyrometer ensures accurate measurement of temperature. Many rock-forming minerals can thus be studied as regards their genesis and the conditions under which they are stable. Quartz, felspar, diopside, enstatite olivine, nepheline, wollastonite, tridymite, and many other components of igneous rocks can be produced in the laboratory. The action of gases can also be determined in apparatus specially designed to resist great pressure at high temperatures. Microscopic examination of the products has reached a stage of minute accuracy which greatly facilitates the interpretation of the results. We might almost regard this as a "new" petrology, but it is really a development of a method of inquiry which was initiated by Sir James Hall in the early years of the nineteenth century. Hall made experiments to prove that by slow cooling a molten basalt would consolidate, not as a glass, but as a crystalline rock. Afterwards he made a laborious investigation into the behaviour of chalk and limestone when heated in closed vessels, and succeeded in obtaining a crystalline marble. His results have been much discussed, and of recent years his experiments have been repeated with all the refinements of the modern laboratory. Hall's position as the founder of experimental geology has been vindicated, and his work remains a classic in this department.

HEREDITY, ENVIRONMENT, AND EVOLUTION.

Prof. E. S. Goodrich points out in his address to Section D (Zoology) that it is nearly one hundred years since Charles Darwin began his scientific studies in the University of Edinburgh. Certain problems relating to Darwin's doctrine of evolution still remain unsolved, and it is useful from time to time to re-examine the very foundations on which our theories are laid.

In trying to answer the question why some characters are inherited and others not, inheritance is defined as the reappearance in the offspring of a character possessed by the ancestor. Its constant reappearance is shown to be due neither to its age nor to its importance, but to the presence of both the germinal factors of inheritance and the environmental conditions or stimuli which co-operated in its formation in the parent. Characters are all of the nature of responses to stimuli which mould the course of metabolism. The factors alone are transmitted from parent to offspring in the germ-cells. The characters are produced anew at every generation. We should carefully distinguish between transmission and inheritance, and it is clear that whereas factors may be transmitted, characters as such never are.

There is no difference in kind or value between characters, and if some are inherited regularly and others not, the distinction lies in the constancy of the factors and conditions which give rise to them. There is only one kind of character, but there are two kinds of variation—modification due to change in the effective environmental stimuli, and mutation due to change in the complex of germinal factors. These variations must not be confused, as is so often done, with the characters that result from them.

The perpetual growth reproduction and transmission of the factors of inheritance (continuity of the germ-plasm) are but one aspect of the continuity of the metabolic processes at the basis of all the manifestations of life. Just as the various steps in the metabolic process are dependent on those which preceded them, so when an organism becomes differentiated into parts these react on each other and act as internal environmental stimuli, calling forth further responses which may modify the first. From chains of interdependent responses arise the power of individual adaptation and self-regulation. Whereas the lower organisms

develop to a great extent in response to external stimuli over which they have no control, the higher gradually substitute internal for external stimuli, thus acquiring considerable independence. Inheritance is made secure by ensuring that the necessary conditions are always present. The answer to the original question now appears to be that only those characters can be regularly inherited which depend for their appearance on conditions always fulfilled in the normal environment, external or internal.

Prof. Goodrich goes on to deal with the nature of the factors themselves, their relation to metabolism, and their possible alteration by the environment. How new factors are acquired is the fundamental problem of biology. Prof. M. F. Guyer's experiments are described. His remarkable results seem to show that an anti-body may be made to act on the germinal factors corresponding to its antigen, and that heritable mutations may thus be produced experimentally. A Lamarckian interpretation of these results is rejected.

In answer to the question, "What share has the mind taken in evolution?" it is pointed out that to the continuous physico-chemical metabolic process, describable in scientific language as a consistent series of events in an outside world, there corresponds a continuous series of mental events describable in psychical terms. The one is not a product of the other, nor does it control or interfere with the other; but confusion may arise because in a description of behaviour the gaps in our very incomplete knowledge of one series are usually filled in from the other. It is further pointed out that instinctive behaviour is carried out by a mechanism developed under the influence of stimuli, chiefly internal, which are constantly present in the normal environmental conditions, while intelligent behaviour depends on responses called forth by stimuli which may or may not be present. Hence the former is, but the latter may or may not be, inherited.

Finally, it is urged that these questions of factors and environment, heredity and evolution, are not of mere academic interest, but are of great importance for the progress of civilisation. Could we acquire the power to control and alter at will the factors of inheritance in domesticated animals and plants, and even in man himself, such vast results might be achieved that the past triumphs of the science would fade into insignificance.

APPLIED GEOGRAPHY.

Dr. D. G. Hogarth takes "Applied Geography" as the subject of his address to Section E (Geography). By this term is meant a loan asked of, or offered by, geography for the purpose of another science. It may be applied by students and teachers of the borrowing science, or by those of the lender; but if the latter devote themselves to such application they are for the time being seconded from their own sciences to the service of the others. Many geographers, especially in America, disagree with this view, holding such applications to be functions, even the main functions, of geography itself. If, however, the study of the "human response to land-forms" is the science of geography, that science is still in its earliest infancy! Geography has properly to consider man only from the point of view of his distribution over physical space; and study of the physical environment should precede the study of man in it. The prior importance of physical geography is not recognised in official curricula.

Geographical science is first and last the science of distribution. It includes the investigation, study of causation, survey, and diagrammatic delineation of all the superficial features of the earth. Of these, causation will be the last study to be exhausted. To the understanding of it many other sciences have to give help to geography, even as they ask her in turn to help them about the distribution of their own material. But it is, and will, remain a true function of geography. At the same time delimitation of geography from the sciences aiding it or aided by it is not easy, and has been obscured by progressive changes in the popular use of the word "geography," and by the continual parturition of specialisms by the latter, which come in time to be accepted as new sciences, but often remain for a while imperfectly detached from the mother. Such has been geodesy.

To teach geography, therefore, only in its application to history is not to teach geography as a science, and to do so discourages the study of the thing to be applied. This lessens the value of the application as much as it does the standard of geography proper. The Ministry of Education, the great scientific societies, and the universities must see to it that the study of the mother science is better encouraged, if many other sciences and much education are not to suffer.

LABOUR, CAPITAL, AND WAGES.

The conclusions put before Section F (Economic Science and Statistics) by the president, Mr. W. L. Hichens, in his address, are as follows:—There is no simple and straightforward system applicable to the division of the proceeds of industry between labour and capital. Both are essential to industry, and, therefore, to each other; hence the deeper interests of both lie in co-operation, and the task before the leaders of labour and of capital consists in promoting the interests of both, not in selfishly pursuing the advantage of the one at the expense of the other. Both must recognise the need of contenting the other, for if capital is not satisfied its springs will dry up and the industrial body will wither away, whilst if labour is discontented and the members of the industrial body war against each other, the end is death. The real solution of the problem is a moral one, and can be achieved only if justice and virtue govern the lives of the members of the community, for all human organisations must re-

flect the character of those who work them. Arbitration offers no immediate solution of the difficulty, for to be effective it must be voluntarily accepted by the majority on both sides, and the principles by which arbitrators are to be guided must first be clearly expressed and accepted; but it is the goal at which civilisation must aim, and as a step in this direction public inquiries into all disputes between labour and capital should be encouraged after all attempts at mutual agreement have failed. A clearer understanding of economic truths in the industrial world is essential if disputes are to be avoided. It must be recognised that the wealth available for wages depends on the total production of the country, and that whilst, if production increases, wages will go up, if it falls wages must come down. So long as the present industrial system continues, the wages system must prevail, and profit-sharing is no substitute for it.

The fundamental wage, or the wage of unskilled labour, should be a living wage—that is, a wage suitable to the development of the physical, moral, and intellectual attributes of the citizens of a free country; but it must be recognised that the degree to which this ideal can be attained must depend on the skill and endeavour of the people, and due regard must be had to the progress, maintenance, and well-being of the industries of the country. It is idle to hope that the living wage can be based permanently on any given standard of civilisation; it is bound to fluctuate at different periods, and will depend largely on whether the industries of a country are progressive, stagnant, or retrogressive.

WATER-POWER DEVELOPMENT.

Prof. A. H. Gibson's address to Section G (Engineering) is devoted to a consideration of inland water-power and tidal-power development, with special reference to the possibilities in the United Kingdom and in the British Empire. The importance of water-power development, in view of the necessity for the conservation of solid and liquid fuels, needs no emphasis, and the extent to which such development has been taking place during recent years may be gauged by the fact that two-thirds of the water-power now being utilised throughout the world has been harnessed during the past decade. The proportion of the available water-power which is utilised throughout the British Empire is only slightly above 1 per cent. as compared with, approximately, 24 per cent. for the continent of Europe and for the U.S.A. The scope for further development in this field is obvious, and it should form a fruitful field of activity for British engineering for many years to come.

On the mechanical and electrical sides of water-power engineering the development has been rapid, and the modern turbine differs essentially from the types in common use a few years ago. Much investigation work in this direction is now in progress, and promises to give important results. Research in many other directions is also urgently required, and the importance is urged of instituting, on an adequate scale, a hydraulic laboratory at some institution of university standard for the special study of the many special problems now awaiting solution, a number of which are indicated in the address. The subject of tidal power is also considered briefly, with special reference to the problems still to be solved before any large scheme can be undertaken with confidence.

THE RÔLE OF PHYSIOLOGY.

The relation of physiology to national life, to science generally, and to medicine in particular, is the theme of the address delivered by Sir Walter M. Fletcher to Section I (Physiology). Physiology, as we know it to-day, became established as a progressive branch of science when it was divorced from the study of anatomy just fifty years ago, when William Sharpey became professor of anatomy and physiology at University College, London, and to Sharpey and his personal influence the development of all the chief British, Canadian, and American schools of physiology can be traced. But until 1914 physiology had developed as one of the primary departments of knowledge chiefly in the older universities, where it was out of touch with the great centres of population and, in consequence, with medical needs. While this detachment allowed of a fuller and freer development of the subject, the urgent needs of humanity were not brought clearly before physiologists. The problems presented by the war served to remedy, in great measure, this defect. Changes in blood pressure and quality, the chemical mechanisms of the body, studies in heat loss and production in relation to climate, clothing, and diet, are some of the many "human" problems which had to be solved; the stresses and accidents of warfare provided an infinitely varied series of experiments on the human body. It also had a wholesome effect from its tendency to break down the barriers that had grown up between physiology and the practical needs of medicine.

The progress of physiology during the past half-century can be regarded alternatively as an analysis of the varied though inseparable functions of the parts of the body or as a synthesis leading towards the unification of the functions of all the parts in a single functional organism. The analysis has led to a growth of specialism within the mother-science, but there is a growing tendency to regard the whole organism as a physiological unit in relation to which alone the functions of the organs and their cellular subdivisions can find due expression.

At the present time there appears to be a danger that physiology will be confined to the medical schools, a fate which will limit its outlook by depriving it of co-operation with kindred sciences and tend to keep from it many promising recruits who are not contemplating medical studies. The

primary task of physiology is to enlarge the vision of man and enrich his knowledge of truth; to find power to diminish pain and restore health is a secondary task which must not be allowed to obscure the primary and greater aim.

MIND AND CONSCIOUSNESS.

In Section J (Psychology) Prof. Lloyd Morgan deals with the status of mind and consciousness in what he speaks of as emergent evolution—the word "emergent" being here used in the sense suggested by G. H. Lewes in distinction from "resultant." In line with Prof. Alexander's treatment in "Space, Time, and Deity," ascending stages in evolution of (1) the physical, (2) the chemical, (3) the vital, and (4) the conscious are emphasised. In each a new "quality" is found and must loyally be accepted as given. But the physical and the conscious are regarded as heterogeneous in that the latter is felt or enjoyed. If we may infer that life process, as such, is accompanied by enjoyment, its affective integration may primarily be that to which the ill-chosen adjective "unconscious" should be applied. It is urged that since this word is "served with a negative prefix," it is imperative in some way to define the conscious. Differentiating criteria are suggested in the presence of some measure of (*a*) revival, (*b*) expectancy, and (*c*) objective reference. That which is unconscious is characterised by the absence of these criteria. The distinction between subliminal and supraliminal is, on this view, different from that between unconscious and conscious. There is much supraliminal enjoyment which is unconscious if these criteria of consciousness be accepted. It is keenly enjoyed, but without felt "againness" in revival or "comingness" in expectancy. In the development of consciousness two levels are recognised: (1) the unreflective stage of naive perceptual cognition, and (2) the reflective stage of judgment where "values"—truth, beauty, and ethical goodness—are emergent. A distinction is drawn between scientific interpretation and metaphysical explanation. At any given level science interprets the emergent characters found therein as dependent on, but more than, those which obtain at lower levels; metaphysics interprets the lower in terms of that which is reached at a higher stage, and ultimately the highest. Each may be valid in its appropriate universe of discourse. They should be regarded as complementary and not antagonistic.

PLANT EVOLUTION.

The subject of Dr. D. H. Scott's address to Section K (Botany) will be "The Present Position of the Theory of Descent in Relation to the Early History of Plants." The first part of the address is concerned with general questions, and especially emphasises our present ignorance of the methods of evolution. The advent of genetics marked the end of the Darwinian period. The absence of satisfactory evidence of variation is pointed out, and attention is directed to the new theory of the origin of species by crossing. The prevalent attitude towards the doctrine of natural selection is briefly criticised. The essential service rendered to biology by genetics, in ensuring that organisms should be thought of as races rather than as isolated individuals, is recognised. The question of the conception of a "species" is touched on in passing.

The second and larger portion of the address is occupied with questions relating to the early history of plant evolution. Such inquiries, though necessarily speculative and, from a post-Darwinian point of view, more difficult than ever, are not regarded as hopeless. The transmigration from sea to land is discussed in the light of our newly acquired knowledge of an early Devonian land flora. The affinities of the Rhynie plants and their allies in relation to Pteridophyta, Bryophyta, and Thallophyta are considered, and the bearing of the new data on the homologies of the sporangium is indicated. The question of the existence of ferns in the older Devonian flora is discussed. The independence and antiquity of the seed-plant phylum are maintained, and in connection with this subject a brief sketch is given of our present knowledge of the Pteridosperms and of their relation to other Spermophytes. In conclusion, the current monophyletic and polyphyletic hypotheses of the origin of vascular plants are contrasted.

EDUCATION IN MUSIC.

Sir Henry Hadow urges in his address to Section L (Education) that music should be recognised in our formal education of school and college, and that it should be given a place in the curriculum and full recognition in the examination system. He suggests that music for the whole school should consist of little more than class singing and an occasional concert or lecture, and that those who have the taste and aptitude for pursuing its serious study should do so in substitution for some other subject. The study of a great composer might be made of as much educational value as that of a great poet. On the other side, the qualities of abstract thinking and of mental construction implied in the study of musical form are closely analogous to those of our natural sciences, and might well be made of the same educational value. It should be quite possible to draw up a syllabus for music which would fit into the existing schemes of school and college work, and would not encourage faddists, or excuse idlers, or produce that lamentable class of people, not yet quite extinct, who talk emotionally about music without any understanding. There should also be a great improvement in the place of music in our libraries. Every public library in the country, and, if possible, every school and university library, should contain a musical department which includes not only the standard classical compositions, but also the first-rate books on musical æsthetics and criticism. Moreover, our attitude towards music needs to be simplified. We want really to pool our knowledge, to concentrate our

nterests, and to develop a sense of comradeship ind co-operation, and this can be done only if we ire all made free of the company—if our musical education is such that we can meet each other as frankly and openly in this field as educated men are accustomed to do in the discussion of science or poetry.

AGRICULTURAL ECONOMICS.

The address of Mr. C. S. Orwin to Section M (Agriculture) deals with the importance of the study of agricultural economics. It points out the overriding influence of the economic factor in all matters affecting the management and development of land. Soil, climate, and other factors have their importance, but the farmer can grow anything if there is a market for it, and his main consideration must be in all cases, not what will the land grow, but what can he sell at a profit to himself. Examples are given to illustrate the relatively small importance of soils and climate in crop production and the dominating influence of the market in combination with transport facilities.

Attention is also directed to the need for economic study in the organisation of farm management so as to prevent the wasteful application of one or more of the factors of production: land, capital, and labour. Thus a small farm may be made highly productive by a prodigal use of manual labour, but the same amount of labour applied to a larger area of land in conjunction with a bigger capital outlay on machinery equipment will increase the output per man employed, and it is suggested that production can be directed scientifically and to the general advantage only by a study of the three factors so as to use them in proper relation to each other.

The address aims at directing attention to the fact that the scientific research work in agriculture, which was first inaugurated publicly about twenty-five years ago, has taken no account of the need for the study of agricultural economics, and that agricultural research can never bear its proper fruit until investigations conducted along the lines of natural science are balanced by research work on an equal scale in agricultural economics.

SCIENCE AND CITIZENSHIP.

Sir Richard Gregory's "Message of Science," delivered to the Conference of Delegates of Corresponding Societies, is a plea for closer association between scientific workers and the rest of the community, as a means of promoting social well-being.

Civilised man has proved himself unworthy of the gifts which science has placed at his disposal, with the result that squalid surroundings and squandered life are the characteristics of modern Western civilisation instead of social conditions and ethical ideals superior to those of any other epoch. Responsibility for this does not lie with scientific discoverers, but with statesmen and democracy. Like the gifts of God, those of science can be made either a blessing or a curse, to glorify the human race or to destroy it; and upon civilised man rests the decision as to the course to follow. With science as an ally, and the citadels of ignorance and self as the objective, he can transform the earth; but if he neglects the guidance which knowledge can give, and prefers to accept the phrases of rhetoricians, this world will become a place of dust and ashes.

Unsatisfactory social conditions are not a necessary consequence of the advance of science, but of incapacity to use it rightly. Whatever may be said of captains of industry and princes of commerce, men of science cannot be accused of amassing riches at the expense of labour, or of having neglected to put into force the laws of healthy social life. Power—financial and political—has been in the hands of people who know nothing of science, not even that of man himself, and it is they who should be arraigned at the bar of public justice for their failure to use for the welfare of all the scientific knowledge offered to all. Science should dissociate itself entirely from those who have thus abused its favours, and not permit the public to believe it is the emblem of all that is gross and material and destructive in modern civilisation. It is the pituitary body of the social organism, and without it there can be no healthy growth, mentally or physically.

The Conference of Delegates provides an appropriate platform for this message of exhortation. There are now 130 Corresponding Societies of the Association, with a total membership of about 52,000, and their representatives should every year go back, not only strong with zeal for new knowledge, but also as ministers filled with the sense of duty to inspire others to trust in it.

The Present Position of the Wave Theory of Light.[1]

By DR. R. A. HOUSTOUN.

II.

WE come now to the fundamental difficulties. They have been stated very clearly by Dr. G. W. C. Kaye in his book on X-rays, and we shall borrow his method of presenting them:—

(1) When X-rays encounter a gas, only an exceedingly small fraction of its molecules becomes ionised.

(2) The extent of this ionisation is unaffected by temperature.

(3) When X-rays encounter a metal, the corpuscles ejected have a velocity which

(*a*) does not depend on the intensity of the X-rays, and so is independent of the distance of the metal from the X-ray bulb;

(*b*) increases continuously with the hardness, *i.e.* frequency, of the X-rays;

[1] Continued from p. 15.