2196
literature

EO 9653

HANNO

OR

THE FUTURE OF EXPLORATION

TO-DAY AND TO-MORROW

For a full list of this Series see the end of this Book

Some work of noble note, may yet be done,
Not unbecoming men that strove with Gods.
The lights begin to twinkle from the rocks,
The long day wanes; the slow moon climbs; the deep
Moans round with many voices. Come, my friends,
'Tis not too late to seek a newer world.
Push off, and sitting well in order smite
The sounding furrows; for my purpose holds
To sail beyond the sunset and the baths
Of all the western stars, until I die.
It may be that the gulfs will wash us down:
It may be we shall touch the happy isles.

Ulysses.

HANNO

OR

THE FUTURE OF EXPLORATION

BY

J. LESLIE MITCHELL

LONDON
KEGAN PAUL, TRENCH, TRUBNER & Co., LTD.
NEW YORK: E. P. DUTTON & Co.
1928

PRINTED IN GREAT BRITAIN BY
STEPHEN AUSTIN & SONS, LTD., HERTFORD.

CONTENTS

HANNO

OR

THE FUTURE OF EXPLORATION

I

"To Sail Beyond the Sunset"

Of our bleaker earth-world lying between the ice-belts of ten thousand years ago it is probable that scarcely a square mile remained untrodden by men. But of geographical exploration, of deliberate adventuring into the unknown for the purpose of apprehending the facts of the earth's surface, there was none, for men had not yet invented an alphabet.

Man's ancestral terrestrial home is still in dispute. But the proofs are

conclusive enough. It was South America. That most anthropologists disregard the proofs because of the fact that ancient Asia Minor—with suburban amenities of good water, gravel soil, and timber near at hand—would have provided a much more suitable base for the greatest adventure of pre-history, is merely evidence of the weight of the Judaic traditions. It is improbable that Mr. Shaw's Life Force, unadvised by Professor Elliott Smith, displayed half the forethought credited to it.

Since remote Pliocene times, six hundred thousand years before Christ, when the first ancestral ape-clans, originating on the southern fringes of the great Brazilian forests, spread slowly up through the Pacific lands, hung and drifted and developed and differentiated, then sprayed out north, west, east, and south again, innumer-

able tribes have marched and countermarched in the trail of pioneering adventurers. But few of these early pioneers were explorers. They were hungry apemen, prowling pithecanthropi, low-browed Aryan stragglers beyond the Ural walls, enemy-pressed, outlawed, berry-seekers and searchers after succulent foods and free wives. Their curiosity concerning the unknown lacked impersonality. The Neanderthaler prowling up wild canyons of France, where, two hundred thousand years later, descendants of his own conqueror were to indulge in an orgy of Neanderthaloid brutishness, was no explorer. He was unamazed by glimpsed mountains and stirred by no desire to test the touchability of the horizon.

One stresses in the explorer's mental equipment that half-unreasoning dream-pursuit, that aching wonder,

that nameless urge. In the crinkled leaves of pre-Christian history, in the dim records of kings and courtesans, raids and rapines, wars and widowings, the tale of Hanno's voyage is read with a sense of shock. For Hanno, "King of the Karchedonians," sailing with five small vessels to plant new trading stations on the Moroccan coast, and passing beyond the Straits of Gibraltar, was seized with an Unpunic madness. He did not stop at planting trading stations; he sailed still southwards, into stench and heat and a glassiness of ocean, out of the light of security and the known into a wild and terrifying dream. He could have hoped to plant no further trading posts; he could have hoped for no prize of the seas or loot of the coasts; southwards was hell and the world's end.

And still southwards sailed the ships. To the right a dark shore of menacing

forests looped and wound. The heat grew; with the falling of night the shores in darkness boomed with drums and the chanting of devils; one night, looking from their little ships, they saw a red light grow to brilliance across the forests: all that night it grew and shuddered upon the horizon. By next morning they saw that the forests were on fire. Their passage lit at day by a sun ever more overpowering, at night by the infernal glare of the shore, they still sailed southwards. And ever as they sailed out of the red-lit forests boomed the drums.

It is a story in a dream. Somewhere down the reaches of that wild coast they turned back, away from the fires and the reddened rivers, the booming nights and the unknown voices. Somewhere in that voyage they over-reasoned or overpowered the mad admiral. They fled back north again,

and after long voyaging came to Carthage and hung in the temple of Ashtaroth the skins of men-brutes captured on an island within an island.

Hanno, the mad admiral, sailing south over the rim of the world, leaving far behind, lost beyond the Pillars of Hercules, the friendly gods, strong and wise to protect, is the first explorer on record. He presumably had no fear of unfriendly gods, desired to know more of devils and the extent and nature of their country, had a curiosity to find out exactly where Ocean fell over the brink into the enormous cataract of legend.

But the explorer is no mere victim of wanderlust, that child of George Borrow and the American booksellers. The recording, as well as the apprehension, of the hitherto geographically unknown, is a necessary qualification of exploration. There may have been

Mayans who explored down through Panama, came to Peru, turned over across the Andes and discovered Manoa, urged to it all by the desire for knowledge; there may have been Norsemen who left Red Eric's land on the St. Lawrence, voyaged down the Mexican Gulf in the twelfth century, and wandered through the Nahua republics to the Pacific shore; Bushmen of South Africa may once, in ten generations, have produced some anomalous son who set out through the Kalahari and so northwards, by Congo and the dank forests and the Great Desert till he stood amazed on the borders of Roman Numidea. But these hypothetical adventurers left no records with which the modern world is familiar. Probably they left no records at all.

Even had they done so the lands of their explorations would still remain,

to us of Aryan speech and Mediterranean script, unexplored. For China, at the least, expelled from her borders, at lengthy intervals, adventurers into the geographically unknown who had the divine urge upon them. South-eastwards and south into the Malay Archipelago they explored; they may even have reached Australia and America before the Europeans. But the Chinese mind, platitudinous, symbol-seeking, moralistic, is ill equipment for an explorer. The histories of these explorations are things of mist and fantasy, voyagings to lands of faery and fatuity.

No doubt an intelligent pigmy of the Wambattu, questioned as to the future of exploration, would reply: "Immense. Outside the range of the Great Forest the world remains unexplored." In these pages I have attempted some other answer. The

intelligent Wambattu and the intelligent Scotsman—Mr. John Buchan writing in *The Last Secrets* that "there are no more unvisited, forbidden cities or unapproached high mountains or unrecorded great rivers"—are conservatives both.

To be suggestive rather than authoritative (as in the following pages) is a practice without honour in modern pamphleteering. The present writer is, however, compelled to admit that he himself has never explored the unexplored, even as (he believes) Professor Einstein has shown a complete inability to curve round the cosmos on a straight line, in order to prove authoritative on Relativity.

Some of the impedimenta of exploration I have considered may never be invented. They may never be required. The inventor-explorer may pass beyond them in leaps.

Leonardo applying his mind to exploring equipment would no doubt have produced craft weird and complicated enough—*chefs-d'œuvre* in the imagery of Mr. Heath Robinson. History plays sad pranks with all prophecies.

Nor is it the purely fantastic prophecy of mechanical development that most frequently earns the ridicule of the unborn. An inquiring and imaginative soul of Neolithic times who, impressed by his first years of dugouts, prophesied that in the future dugouts more and more gigantic would be built, that paddles 40 feet long would be wielded and trees capable of building such monstrous craft would be found, would have erred grievously. Yet it would have been a legitimate prophecy for his time. Far more so than to prophesy that immense hulks, fashioned of the same material as the

scarce pieces of dull iron-metal which he wore as charms, would one day ride the waves.

To consider the possible development of the aeroplane into helicopter or ornithopter, the "submarine" into submersible, the projectile into a traverser of the immensities of space may be to reason logically but to prophesy ludicrously. Chariots of fire may yet ride the skies. A pin point of atomic energy may yet be capable of hurling regular trains of projectile-carriages safely and conveniently across the solar system, from planet to planet, carriages de luxe of the Selenite Syndicate, and the like. But such possibilities are outside consideration To-Day and To-Morrow. Their triumphant realization lies at least a week ahead.

To explore an atom may be a greater achievement than to explore a con-

tinent, but actual *physical* exploration of the unknown—geographical, selenographical, aerographical, stellographical—has a deeper and simpler urge and impulse. Far from having shrunken, its fields stretch infinite to the telescopic stars. As yet our Earth is largely *terra incognita,* not only to the Mediterranean peoples, the whites, but to all mankind. Even its surface, so largely mapped and confident, with its radio stations, its air-routes, its steamship-lines, has kinks and belts and desert and jungle waste untrodden by any Caucasian. There are still mountains to climb, rivers to cross, ruins to unearth and scripts to decipher. There are still shores and islands in the great ocean rifts unvisited by ship or sail, unstrewn with trippers' banana-skins, unawakened by the music of the phonograph.

FUTURE OF EXPLORATION

In and beneath the tumbling immensities of the tides, below the earth's crust, in peak and swamp and guarded forest, are dark lands and kingdoms of wonder awaiting the explorer of to-morrow.

And in that same to-morrow—not in the far deeps of the future—the first terrestrial explorer to achieve an inter-planetary crossing will gaze out on the dark mountain-bluffs, the unearthly jungles and the careering whirlwinds of an alien world. And behind him in the years, successors of Hanno, out beyond station and trading-post and the known and lit places of knowledge on that soon unalien planet, other explorers will press forward, over the brinks of reddened oceans, into dark lands of chanting devils and infernal fires . . .

The bespectacled apostles of valour and virility who, in Jaeger underwear

and the monthly reviews, bewail the passing of these virtues with the prospect of universal disarmament, are needlessly alarmed. In the explorer's safari and the explorer's trail there is enough and to spare of adventure and hardihood to last all mankind for a length of time stretching as remote into the future as the Pliocene does into the past.

But in that tremendous morrow of the explorer we can hope that a sane world will send him forth, whether into the tunnels of the earth, the wells of the sea or the starred depths of the ether, with full equipment and blessing and cheer. No longer will philanthropic industrialists or bombastic societies of subscription scientists rule and restrain the while leaders plead for grants, no longer will the under-fed, under-staffed expedition crawl and rot by jungle trails because of the indifference

or jealousy of the world from which it has gone forth. Science and order will rule that world, the snarling buffooneries of competition have given place to the sanities of universal co-operation.

Yet still the explorer will pass unguarded into the unknown, still will danger lie awaiting him in pits and kloofs and horrifying shapes. Still will men die on lonely mountain-tops, in frozen wastes, far and forgotten.

Across undreamt-of lands they will pass and vanish, following the immemorial piping of Romance beyond the mountains.

II

Icefield, Forest and Waste

There are freakish folk who maintain our planet to be in shape an inverted cone, to be a hollow cylinder. Even the conventional geographer has passed beyond the belief that the earth's shape is spheroid. It is rather roughly tetrahedral, with a northwards, asymetrical bulge. Mercator's projection, so long accused of distortion, is, scanned north of the equator, probable a more accurate representation of the sub-arctic than is any globe.

But for illustration the globe is still useful, in spite of wild rifts and bulges, intractions and protuberances unsuspected two centuries ago. From

Northern to Southern Pole the dark places on it, unexplored, lying patchily, in irregular belts, are roughly classifiable in their characteristics into Icefield, Waste, Forest, Waste, Icefield.

If a sackful of grain were miraculously spilled from Heaven in the midst of a snow-covered meadow and its advent made known in vision to a few of the more extremely hungry and adventurous of the surrounding fowl-runs, numerous faint trails, converging towards the grain, would soon print the snow. The grain found and gorged by the hardier of the sack-seekers, the fowls, stomach-proud and a little dizzy, would retrace their steps, and the snowfield, with all its unvisioned mysteries, remain much as before.

So, to a large extent, it has been with the ice-caps of Arctica and Antarctica. Lure of the grainsacks—

the Poles—has drawn the explorer by many different routes, but the Lands Between still stretch their leagues of *terra incognita* to challenge the venturous.

Arctica unexplored possesses a giant triangle, not quite isosceles, with a line reaching from the Liakhoffs to Point Barrow for its base and the North Pole for apex. De Long's furthest north in 1881 has been almost the only incursion of the explorer upon it. Its white allure is fringed with moving ice-sheets, east of which the *Fram* once scraped in its historic drift. Its survey and exploration present problems which I cannot but believe will be overcome, though certainly neither by athletes nor special correspondents. Amongst explorers the Siberian coast is held to be the best base of approach and there are rumours that the Moscow and Lenin-

grad societies are already fitting out expeditions for that venture.

In either these or other future expeditions it is improbable that any extreme departure from the conventional in Arctic equipment will be achieved. The giant northern triangle has the promise of being a wilderness of uncertain winds, snows, and ice-hail—at least to a distance reaching far pole-wards. Some development of the German rotor-sledge may be used beyond the water-stretches.

For purposes of northern exploration the aeroplane has been much overpraised. It is no more an instrument of exploration than Herr Amundsen is an explorer. The trans-Arctic flights early in the present decade achieved nothing; they were mere exuberances of ignorance favoured by inexuberance of climate. As a scouting and general survey instrument it has its uses under

favourable conditions. The Great Triangle is seldom likely to provide such.

But neither aeroplane nor airship is the last word in aircraft. Their mastery of the air is scarcely beyond the level attained in the mastery of the water by the catamaran of the dawn-savage. The time is probably very near when the Wright invention, with its pitiful inability to achieve vertical ascents or descents, its clumsy and continuous stalling dangers and general untrustworthiness, may be superseded by craft that will indeed transform normal land exploration; craft capable of hovering (i.e. of being maintained in the air with the propulsion screw shut off) are almost within the inventor's view. The autogiro has pointed the way.

But even this impending transformation of the flying machine will scarcely affect Arctica. Probably to the last

the explorer upon it will explore as at the beginning. Mechanical aids will remain few and far between.

The case alters with the half-explored Arctic and sub-Arctic belts lying south of the Great Triangle. Attempts at exploration of North Alaska and the North-West of the Northern Territories have of recent years been carried out almost entirely by aeroplane, notably in the American Government surveys of 1926. From the very nature of present-day aircraft, however, such exploration has remained in the nature of the exploration of the moon's surface achieved by telescope.

In this southern fringe of the great Northern ice-belts, the explorer of to-morrow, following the finger-posts of the American 1926 Survey, will find aircraft useful enough for scouting purposes. Bases in North Saskatchewan are most likely to be adopted, and the

attack made northwards with dog-sledge. Scouting aeroplanes will select in advance suitable camping-places and depots.

In these mountain crinkles, where one range has again and again been traversed by the casual prospector, and another, untrodden, has been glimpsed through mist and fantasy, exploration and mapping from central camps over definite areas appears to be the most obvious task for future expeditions. Air photography will help, especially in determining the exact position of the dim Alaskan volcanoes said to have been sighted.

There is an Indian-Esquimaux legendary land in these Northern wastes—an Amerindian Avalon, a valley deep in the mountain-blocks, shut-off, secure, with unfreezing rivers and mighty trees. Lone miners and trappers have heard of it; they say that the

mammoth still browses in its hidden woods.

In 1926 a remarkable experience in these latitudes befell Colonel Williams, one of the aviators of the American Survey, and his mechanic, Caldwell. Flying over unfamiliar country in rough and foggy weather, they had been watching the mountain serrations below them, bare, snow-spilt, jagged, with the dun tundra swamps interspersing. Suddenly, in the racing mountain-edges below them, leapt to view a wide valley, tree-covered, with the glint of running water. For an amazing moment they saw it, then the mist blotted it out.

Amidst its forests rich nasal gentlemen may yet pursue the prehistoric with elephant guns.

In size, however, the ice-lands of the unexplored South dwarf the Northern. Almost half the Antarctic

continent remains untraversed and unknown. From Kaiser Wilhelm Land to Coat's Land it is an uncertainly-dotted coast-line, except for the Enderby-Kemp tintings.

Three main reasons have left this stretch almost entirely unexplored: It is a land of mist, the pack ice surrounding it proving almost channelless, except to the fortunate, encountering freakish drifts; there is no convenient base of approach; its coast-line bulges far out into the Circle, thereby almost trebling the distance between any point of disembarkation and the Pole, when compared with the comparatively short route from South Victoria Land.

Hitherto, because of that unattained Pole, the opposite quadrants have attracted the explorer. (Shackleton in his last voyage is an exception.) Their coast-lines have been accurately

charted. Great stretches of their interior, fringing the different southwards routes, have been made known. New Zealand and Australia have supplied convenient bases of approach.

Since the theatrical gorging of the grain in 1911–12, however, the main distraction from the serious business of Antarctic exploration has ceased to exist. A large-scale expedition to unexplored Antarctica, with South Africa or South America for direct base, fully equipped with ice-breaking ships and aircraft, is a likely event within the next few years.

Such expedition will probably attempt the coast west of Enderby Land, in ships built on the lines of the *Discovery*, and attain it well before the winter closes in. This will allow for the selection of suitable anchorage for wintering-in, and also for the mapping and survey of the

coast-lying lands before the light fails.

It is to be hoped that such expedition will be one of picked personnel, that wardroom and messdeck will be one. Distinctions of class have hitherto been the curse of exploration in the icefields. The inane "discipline" so much lauded has been productive of little more than sloth, indifference, and responsibility-evasion. The future explorers of unknown Antarctica should each be picked men, equals in that all are specialists, disciplined by knowledge and self-training, not by the monkey-adornments of uniform and the clownish posturings of enforced "respect".

Early in the spring an expedition on the scale assumed should, with good leadership and helicopter aircraft, achieve more in a few months than has been achieved in the other

quadrants of Antarctica since the days of Ross. Without reliable aircraft, capable of combating weather conditions uncertain in everything but uncertainty, it is probable that such an expedition would be largely a waste of time and money. All deductions point to the fact of the pole-wards ice-sheaths beyond the coast being practically impassable on foot.

Coastal explorations by sledge—especially south-westwards, towards Coat's Land, to ascertain the existence of the suspected mountain-barriers—should not prove impracticable. Aircraft scouting southwards will be able to plant advanced bases around which detailed exploration can be carried out. These latter will be primarily geological, the wider geographical limnings being carried out by airmen. Shackleton on his furthest south discovered coal. Perhaps in Antarctica lie great coalfields and beds of yet richer

ore. An Antarctic gold rush in the explorer's trail would probably prove an excellent substitute for contraception in solving the world's problems of over-population.

All three of the more important Waste Lands of the Northern hemisphere—the Saharan Imoshagh-Tawarek regional, the South Arabian interior and the hill country of Upper Burma—are still largely *terræ incognitæ*. All three are roughly bisected by the Tropic of Cancer. Though also untraversed, the other two are far less lands unknown than is the mysterious South Arabian Desert.

Sahara has proved of recent years a constant lure to the over-rich and the under-educated amongst the unemployed. Resultant on strange desert stravaigings with undigested caravans, the European presses yearly disgorge

stout volumes of unbelievable stodginess and inaccuracy. These super-tourist excesses have tended to confuse the genuine explorer and general public.

For the exploration of much that remains untraversed and unknown, some understanding with the tribes of the interior would seem a first necessity. France, devouring the Sahara, partook of a dish which has left her unnaturally and unhealthily distended ever since. More recently the conquering and civilizing of the Riffi has stirred the embers of Jihad across half a continent. The more remote the oasis, the more white they glow. For some time to come it is probable that any exploration of account will have to be made by the educated Moslem of the type of Hussanein Bey.

With respect to the somewhat readily stirred Moslem imagination, it must

be admitted that such explorations are likely to remain unproductive of accurate mapping and recording. To-morrow, when Europeanization is no longer synonymous with machine-gunning and concession-grabbing, the explorer will find a field of venture well worth the outlay of patience and diplomacy which its exploration is likely to exact. From Kawar as a base, or even from the mid-Egyptian frontier, the westwards-lying desert will probably be best crossed by the light motor-car. The caterpillar system replacing the wheels has not proved an unmixed blessing, and it offers interesting experiments in design to produce the light and swift traverser of the sands. But much of the land, the soft and shifting dunes, the great rock stretches, will have to await the close and accurate exploration of a helicopter expedition.

FUTURE OF EXPLORATION

The main discoveries in Sahara will no doubt be ethnological. The rumoured oases of antiquity lie in the south-west of the land, as do the mountains of Berber legend. Archaeological remains in the Sahara have been too often hoped for and too seldom found; credulity still strews the unknown sands with Egyptian remains. But it is extremely improbable that the Egyptians of pre-Christian years ever penetrated far into the Red Desert, let alone the Tawarek regional. The early Egyptians were an owlish people, interested enough in cheap slaves and stolen mines, but even more interested in abiding by Nile-bank and uprearing monstrous sepulchres for their dead and the bored wonder of posterity.

The Northern Burmese hill-jungles are properly outside the description of Waste Land. The surrounding wastes

impose the nomenclature. Lying roughly between the 22nd and the 26th parallels of latitude, the country of the Northern Chins, including the Chin Hills proper, remained unknown, a land of fable and unreliable place-names, until a few years ago. Political troubles then led to the despatch of a British mission into the far northern country of the Nagas (Luhupas). The mission, politely received and carefully shepherded along trodden paths, called together gatherings of chiefs and expounded to them the morality of the Chemical Age as an improvement upon that of the Sun Stone—a proceeding which goes to prove that neither simple faith nor audacity is wanting in the modern explorer.

These northern tribesmen would appear a more or less settled agricultural people, undisturbed through the

centuries by the changes of time and fate and faith; a simple, Heliolithic folk, still sacrificing to the Spring and the cattle-gods, and probably, in the interests of economy, cheating the latter by the occasional disembowelment of an unhappy captive rather than the belle of a tribe. Their land, rolling in volcanic corrugations to the equally uncertain and untraversed Chinese frontier, will no doubt soon be explored by the English, most careful and indefatigable of explorers.

Aeroplanes or autogiros may first be used for general survey and mappings; a large and well-founded expedition, starting from some base well up a confluence of the Chindwin, out-fitted with maps obtained from the aeronautical surveys, and relying more on these than on local guides, should obtain good results. Certainly, apart from geographical considerations, the

region offers an ethnographic field of study to be found nowhere else, since, with the extinction of the Central American and Quichan "civilizations", the Heliolithic phase of culture has elsewhere passed from the face of the earth. Of geographical discoveries, sister-sources of several of the Chinese rivers are probable. The flora of the country is said to possess aberrations from normal stocks.

Last and most mysterious, the third waste land of the Northern hemisphere, is the desert of Northern Arabia, north of the Hadramaut, between Yemen and Oman. It is the most guarded of all the unpenetrated lands, both by the natural phenomena of thirst and sandstorm and by the tribes surrounding. Data concerning it is scant and confusing; neither native nor European seems to have done more than traverse its

fringes. It is probably a limestone country. In remote ages it is said to have been tracked by merchant routes—not one or two main routes, but many. If that was the case, it can be assumed that these caravan-routes were not mere trading-roads into nothingness, or that their multitude only provided communication between Yemen, Oman, and the desert outpost of Riadh. At some time there were probably central oases, worth trading with and capable of recuperating and refreshing the caravans travelling from either coast. The Wahabis, and the wave of insanitary Moslem bigotry that has followed their conquest of Hussein's kingdom, have probably put checkmate to the exploration of the Arabian desert for many years to come, unless a plentiful supply of bakshish is used to salve the outraged Moslem soul.

With present political entanglements, however, an expedition without official backing would merely offer itself a sacrifice to an older desert god than He of the Caaba.

More likely in the near future is an attempted exploration by some single individual of European education, with camel-caravan and all the well-worn paraphernalia of desert-venture. Such explorer will as certainly carry his life in his hands as he will launch out into the conquest of one of the most fascinating tracts of the earth unknown to European science.

The Southern belts of Waste Land also fringe upon a tropic line. The Kalahari Desert and North Bechuanaland are almost bisected by Capricorn; the unexplored bush tracts of Northern and Western Australia lie just north of it. In direct line it passes through much of the unknown of south-central South

America, but there the lands, in spite of pampas encroachments, are largely virgin jungle, and outside the description of " waste ".

That much remains to be made known of Northern Bechuana, and especially of the lands about Lake Ngami, was proved only a year or so ago by the expedition under Dr. Schwartz which returned reporting one of the strangest mass-changes of vegetation ever observed over a wide district within the space of a few years. Great tracts south of Ngami still await opening by the strongly equipped safari. Preliminary aeronautical surveys would be of quite inestimable value. Unless the helicopter comes early, the unveiling of central Kalahari, that ochre blank upon the maps, is likely to be long delayed.

Australia offers a different problem. Its deserts have been traversed and

roughly mapped in much the same way as the icefields of Antarctica. As the icefield explorer has hitherto sought to reach the Pole, so the desert-adventurers of Australia have mostly sought to make a crossing from desert-frontier to desert-frontier. An amazing apathy in obtaining knowledge of its own island-continent has been shown by the Australian Government. " Practical " considerations—doubts as to the " value " of such explorations—are the main determents. Neither unexploited native nor unopened gold-field is believed to yearn for discovery within the dark oval fastness shored by the Ashburton Range, Central Mt. Stuart, Mt. Russell, and the Northern Mt. Wittenoon. Even aeronautical survey has been left to the southern stars in their nightly circlings. Nevertheless, the coming of the government geographer is little

likely to be delayed, for Australia is a progressive state, with slums, strike-breakers, and imperial aspirations, and cannot long tolerate a tract of the primeval at its back door.

Of the great Forest Belts—our planet's dark Equatorial girdle—the *sylvanæ incognitæ* of the Amazon Valley stretch in leagues unsuspected from a casual glance at the Brazilian map. The exploring of the greater tributaries has not by any means meant the exploring of the surrounding country. Few can conceive the stretches of jungle lying between the waterways. In the Acre Territory, between the Rios Acre, Purus, and Yaraucca is an extent of virgin country of at least four hundred square miles; between the Tapajos and the Rio Xinqu in Para there is a tract of almost equal extent; in the State of Matto Grosso, between the Madeira Marmore

Railway and the north of El Gran Chaco—an extent of some eight hundred miles—is darkest America, inhabited by ghostly tribes which are perhaps the residue of the original prehistoric drift of the genus homo.

The problem of exploring these lands is a heavy one. The climate is, from the point of view of modern man, the most inhospitable in the world. It is a stretch of the world which has missed several geological ages; its flora drips with the mists and slimes of an early Carboniferous period; its insect life—queer, strange, almost, one would guess, conscious in its defiance of man—is constant torment and danger; its human inhabitants, cut off for a quarter of a million years from the outside world, are probably even more alien and mentally incomprehensible than the half-known tribes of the river-banks. Natural man, as

dreamt of by Rousseau and the Encyclopædists, uncorrupted by civilization and its vices, feasts cannibalistically on his latest-born progeny (the mother is suspended by the wrists from a tree during child-birth) in his last stronghold beyond the furthest tributaries of the Tapajos.

In the Upper Amazon the Hamilton Rice Expedition of 1925–6 carried out aeronautical surveys of great tracts of forest. The very success of these surveys emphasized the uselessness and unreliability of the aeroplane in actual exploration; to survey is not to explore. Until the helicopter comes both the Acre Territory and the Pampas Sacramento are likely to remain untrodden by the European.

The case alters with the unexplored of the States of Para and Matto Grosso. The Brazilian scheme of planting "Native Attraction Outposts"

gradually deeper and deeper into the jungle, is winning the success that such enlightened policy deserves. The exploration of both " darkest America " and the forests bordering the Rio Xinqu will undoubtedly be best carried out by Government expeditions and missions. Small river-ships, with deck-spaces for amphibian aircraft, and operating southwards from Santarem, are likely to be used ; it is to be hoped that greater care will be taken in the selection of personnel for such expeditions than has hitherto been displayed by the private exploring party—all too frequently staffed by either sentimental enthusiasts or a type of scientific hooligan.

The half-explored forests of Congo suffer these days from a worse pest than the tsetse or the mosquito. It is a land which shares the sufferings of Sahara. It is tracked and counter-

tracked by the lady explorer—mostly either English or American. She comes upriver from Loango to Leopoldville, then plunges into the wilds with a large safari of porters and an even larger guard of askaris. Like the devouring locust or the marching ant, nothing in her track escapes her. She, one suspects, exasperates Belgian officials and native headmen to murderous longings for the revival of cannibalism and the head-pot.

Her exploits would be merely laughable were it not for the fact that she "explores" over tracts traversed again and again, thereby puzzling polite geographical societies by the "discovery" of rivers and swamps which have been included in official maps during the last fifty years. She is under the dominion of her porters and her guard, however little she may suspect it. No safari with such leader-

ship penetrates willingly into the tracts—numerous enough—inhabited by tribes which have no need to long for the return of cannibalism. For much of equatorial Africa of the forests, traversed as it has been, still retains its secrets, still calls for the educated explorer, with experience, tact, and a small and reliable safari. Further north, French territory back of the Ogowe River still shoals from its dwindling and unmapped forests occasional tribes to surprise stray officials and besiege missionary outposts for the curing of ulcers and the interpretation of strange tongues.

Last on the list, curious and apart, the wooded fastnesses of Central Borneo and New Guinea present their problems and allure. In a survey as brief as this of the world's unexplored land-surface, they must abide by even slighter description than their fellows. Of the

two, the magnetic allure of Inland New Guinea is surely unparalleled. As in the Upper Burman Waste the last of the Sunstone Folk still hold their own and live the ancient life that once belted the world from France to Mayapan, so in the hill-forests of New Guinea, sly, treacherous, swamp and poison defended, stoutly conservative and impervious to the penetration of Red Plots, the last of a yet more ancient dawn-culture than the Heliolithic still flourishes and smokes the heads of captives, as across in the kindred Solomons.

Both it and Central Borneo—of which recent and unsuccessful attempts at penetration are reported—await the scientist-explorer. In both an armed helicopter expedition would achieve more in a few weeks than all the previous expeditions of the last three centuries.

III

Submarine

The great blind science of oceanography has advanced far since the days of the *Challenger* and her romantic voyagings and gropings in the latter half of the nineteenth century. Nowadays there is hardly a great ocean area but has been mapped, charted, dredged and sounded, unless it be the Antarctic Ocean within the limits of the Drift Ice Line. Yet scarcely one of all the leagues of sea-bottom has been seen or trodden by men.

This is a fact disconcerting enough when one reflects that the oceans cover, an area two and a half times as extensive as the land surface and we are yet bidden to view a world robbed

of its "last secrets". Oceanographic achievements with dredger, cable, and sounding line have hitherto been mere tentative gropings in the dark. Perhaps these tentacular reachings have merely dragged and scraped along the canyons or across the unfertile hogbacks of the submarine world; perhaps a strange, alien plant life, hardly dependent on actinic stimulus, luxuriates in the remotest depths; perhaps the narwhal and the sea-serpent and the giant polyp do verily inhabit the unplumbed depths, awaiting the time when a strange new metallic monster will invade their solitudes.

It must be admitted that these faithful reportorial stand-bys of the dull season are likely to await for many a long year the coming of their conqueror—if he ever comes. There is no such urge towards the invention of the deep-sea submersible as there is

towards the perfecting of the flying-machine. For, though the blind science may have groped and charted with chill fingers and uncertain purpose, it has brought from out of the depths but little to stimulate enthusiasm or awaken wonder. Deep sea plants and beasts are flora and fauna of faith, not fact. Perhaps the stretching immensities of the Atlantic and Pacific Abyssal Plains will for ever remain unexplored. Radiolarian muds and clays and oozes, the minute siltings and deposits of minute life through uncountable millenia, would appear to floor the greater area of these sunken lands three thousand fathoms below the sea-surface, in murky twilights where the sun's rays hardly penetrate. And in their leagues of flatness these plains have little in contour to relieve their monotony. They appear to lack, lifeless and cold and far more dead

than any planet of outer space, either a past or a present of organic life; their exploration lacks the incentive of wonder.

For in the mental equipment of the explorer who accomplishes—he who invents and plans and voyages with unquenchable ardour—there is a more primitive and complex quality than scientific enthusiasm. The Unknown for him must be the Knowable—glamoured by wonder. He is no passionless scientist, content to dredge minute algæ and the like—and still feel upon him the urge to dredge and bottle and label kindred algæ. He demands drama and wonder on heroic scale.

Further, by what means the "submarine" ship of to-day may develop into the submersible cruiser of the future we cannot even guess. The problem seems as insuperable as the enlargement of the powers of the

telescope. Both instruments may be constructed in gigantic sizes, but the gain in proportion to the increase of area is, beyond a certain point, practically *nil*. Each instrument, as instrument, has a definite limit of development. No telescope will ever draw very much nearer to our gaze the outer heavens than does—say—the Mt. Wilson instrument; no "submarine" will prove capable of much deeper immersion than the later type U-boat or the more modern Lake products.

Nevertheless, we may assume that, just as some new form of star-gazer—some combination of gigantic artificial crystals, perhaps—will yet supersede the telescope and transform astronomy, so the so-called submarine will ultimately be rendered obsolete by the invention of some under-sea craft capable of resisting successfully the

enormous pressures at the sea-bottom. This craft will be fitted with some form of motive power other than those at present known. It will be capable of sinking and rising with ease and certainty, of crawling the sea-bottoms, of cruising the strange worlds of the mid-waters, of threading the rifts and gorges of the Great Deeps.

So much we may assume, for the wonder-urge which drives the mechanical inventor to achievement is of a different order to that which inspires the explorer. So equipped, men will turn their attention to the exploration of the ocean-floors. Even from the viewpoint of present knowledge, not all of these lack wonder-allure. The geologist-explorer may yet be able to ascertain, by descending the shelving canyons of the great Nero Deep off the Ladrones, what truth lies in the belief that the moon was shorn

from the earth's side long after the cooling process was under way; he may yet descend and explore the strange belt of under-water volcanoes which culminate in Krakatoa.

More than any other is the Atlantic a sea of legend. Tradition and folk-lore tell of it islanded and peopled. Somewhere upon it the Greeks placed their Islands of the Blest. The Keltic Avalon lay westwards. Plato tells of Atlantis. On the other side of the ocean the Nahua peoples had legends of an *eastwards* land sunk beneath the waters. Quetzalcoatl was of that land, and returned to it after his civilizing works amongst the pre-Toltec and Mayan tribes. It is true he made his next avatar from Europe in the person of a mean-minded, meanly-bearded clown in scale-armour, whom the Amerindians found little cause to worship. Probably the trans-

planted Quetzalcoatl stock had degenerated.

Legend and tradition apart, there are ethnological reasons—since the abandonment of the absurd belief that the Central American Indians were of Mongolian descent—for postulating the existence of the sunken land. There appear strange affinities in type, in art, in religious outlook, between the Neolithic cave-dwellers of Spain and Southern France and the Nahuas of Mexico and Yucatan. Perhaps the Basques are descended from the survivors of the western inundation of Atlantis.

Exploration by the submersibles of the future will decide the question once and for all. Equipped with giant searchlights, expeditions from Europe and America will descend to chart and map the Northern and Central Atlantic. It is improbable that either sunken

cities or petrified forests will be found. Atlantis, if it ever existed, probably never attained to a culture as advanced as the Sunstone; its forests will have long since withered into ooze. Assuredly no cable line lies across the roofs of a ruined Acropolis.

With the coming of the submersible and the shrinkage of the unknown land-surface, many an explorer of the future will doubtlessly be attracted to submarine research along the North African, Arabian, and Indian coasts. There, at the least, there are buried cities and whelmed sea-borders awaiting exploration and excavation. Perhaps such venture may be an exploring commonplace within the next few years, even whilst the submersible still remains a scientific dream. Good charting, dredging, and diving equipment the explorer will require. All three are at present rare enough.

The ancient, clumsy, and complicated diving suits provided with air tubes to the surface, still used by even Government services, are ill adapted to the purposes of submarine exploration. Even the suits equipped with knapsack oxygen generators are generally miracles of shoddy untrustworthiness. Yet to provide a satisfactory diving-suit, one capable of resisting enormous pressures, should prove a simple achievement for the modern inventor.

Yet even To-Morrow, when the seas give up their secrets to the explorer equipped with submersible and scientific diving-gear, it is improbable that the unknown lands of under-ocean will call with half the allure of unclimbed mountain or untraversed swamp. Even with the last of these climbed and traversed, he will not for long turn to the sea. He will

pass on, in his ceaseless questing, to lands of demon and demiurge —"for there are greater wonders there."

IV

SUBTERRANEAN

Mr. Wells's Grand Lunar displayed a justifiable astonishment on learning that men know nothing of the interior of their planet. Below our feet is a world unexplored. Men have penetrated only a few miles within the earth's crust, and in that penetration have followed the quest of certain very localized minerals. In the wake of the miner the geologist has tapped and queried and theorized, but the earth's interior is still as darkly unknown to modern science as the outside world is to the pigmy of the Wambattu.

Of all regions, the multitude of theorists on its nature definitely stamps it The Unknown. The scientist theorizing on the nature of the earth-

substance six miles below the surface has to-day as free a hand as the geographer of the seventeenth century who postulated vast continents as theoretical necessities all over the southern half of the globe. He may declare for a fluid interior, a metallic interior, an interior with the temperature of absolute zero, an interior with the normal temperature of 212 degrees F. All these beliefs have been held, all have been ably, even venomously, defended. A high internal temperature was once a theological necessity and the mounting mercury of theory received the full sanction of the Christian Churches.

Indeed, it is probable that for long the scientist defending the theory of an entirely molten interior was influenced—consciously or unconsciously—by the orthodox Christian cosmogony. The interior of the earth

was inconceivable except as an exceedingly warm region; to think otherwise would not only have seemed unscientific, but also grossly Pagan.

Yet it is probable that the Pagan view of the interior world of Hades as a dank, dim land is nearer the actual facts of the case.

Nowadays the Molten Fluidists are in a minority. A new school of thought—the definitely Weighty School—sways the world of the geologist, however little pressure it may exert below the crust. The earth is now assumed to have an outer crust, thirty or forty miles in depth, of rock-substance (mineral); below that is a solid metallic core, subjected to enormous pressure, a relic of the original meteoric commingling from which this planet enswirled into being.

This theory of the earth's interior appears to me even more farcical

than that of the Molten Fluidists. It is even more archaic in its concept; it is pre-Copernician. It restores to the earth its ancient dignity as the centre of the universe. Both schools appear to conceive of gravitation as a mysterious force, alien and apart, in the earth's bowels—a force drawing down upon itself in ever-increasing pressures, all material substance attractable. But gravitation presupposes *repulsion* as well as *attraction.* The earth-mass, it is reasonable to assume, is held together, not crushed together, by gravitation. The masses hold by attraction in a homogeneous framework; there is as definite an outward as downward pull; below a certain depth pressure must definitely decrease.

Probably this framework, held in vibrant equilibrium, has a great thickness, but the interior itself can be

nothing but a vast hollow, a cavern of nothingness, with the temperature of outer space.

Some such view has been advanced, and defended with much ingenuity, by Mr. W. H. Herdsman. He, however, favours a metallic shell for the interior hollow. This seems to me unwarranted. It is improbable that the mineral substance at a great depth differs in any great degree from that obtaining six miles below the surface.

To accept this new view entirely alters any preconceived idea as to the earth's "crust" being unexplorable. Accepting it, one concludes that in the downwards penetration there will be no enormous pressures to withstand, no mounting temperatures—except in very localized areas—to render passage impossible. Ascertained facts appear to bear out this view. The deepest mine in the world—that of

Morro Velha in Brazil—shows, even in its furthest reachings, six thousand feet below the surface, no signs of unworkableness through increased pressure. The conventional geologist would have had its galleries destroyed by implosion long ago.

The causes of volcanic action and earthquake shock may be regarded as almost entirely unconnected. Volcanoes are the safety valves of detached pools of molten metal kept in constant liquidity by a variety of causes—of which pressure is probably the least. Earthquakes are probably chiefly due to crustal faults resulting on the vibrational " drum " of gravitation.

The larger mass of the earth-crust surrounding the Giant Cavern may reasonably be regarded as neither solid nor fluid. It is doubtlessly tunnelled and corridor-traversed in many sections. Great areas of it, surrounded

by "non-conducting" walls, are no doubt reservoirs of heat and power. Below the great surface oceans it is believed that other oceans lie, constantly fed by seepings from above, constantly ejecting their surplus waters through wide volcanic belts. Probably the most extensive of these underground seas lies in a great oval stretching from underneath the mid-Atlantic across to mid-Pacific in the north, and under-flowing Antarctica in the South. It is probably exceedingly shallow, in places a gigantic mud-swamp, eternally darkened, gaseous, and unquiet. Its average depths below the surface may be anything between ten and fifteen miles. Even above its shallow waters its roof probably hangs low, pillared, columned, upheld by enormous walls.

It is true that the underground waterways and heatways of the so-

called crust are as yet guesswork—though reasonable guesswork. It has been supposed that another great subterranean lake, the reservoir of many sand-lost waters and seeping river-beds, stretches in twisting channels far under the eastern Mediterranean and Asia Minor. Though underground, it is certain that these shallow seas are swayed by tides, even as the waters looked upon by the skies. Probably they speak of their existence not only through the volcanoes, but in that constant, and almost everywhere uneven, rise and subsidence of the earth-surface.

Organic life may exist underground in these great damp caverns and water-stretches. If so, it will certainly be aberrant life, in forms perhaps gigantic and bloated—rock surfaces mantled with luminous fungi and mosses, seas swum by blind denizens, descendants

of piscine strays from the upper oceans.

At the present rate of depths-descent in Brazilian mines, the great sub-American sea may be reached within the next few years. Wherever or however the first serious incursion into the subterranean is made, whether it fall through accident or design, a dim and amazing world will lie open awaiting the scientist-explorer. Craft will be conveyed down through the earth-crust and sailed upon the uncharted waters. Motor-boats with giant searchlights will sweep their wide spaces and seek their coasts. Though it may be assumed that the air above these waters will in most regions be breathable, it is probable that low gas-clouds drift in wide spaces far from the volcanic belts. Nor may these voyagings be constantly in searchlight - stabbed darkness.

Probably over great areas the volcanic gas flares incandescent above the waters.

Betwixt the surface and the great Central Cavern, the earth "crust" is doubtlessly vastly porous, rent with abysses plunging league-deep. Both above and below the maximum-pressure level these great rifts probably lie. (Below that level the pressure must become less and less until finally, under the void of the Great Cavern, the gravitational pull is probably even less than upon the surface of our planet.)

There is no reason to suppose that the subterranean explorer of the future—however remote—will rest content with the charting of the seas and mud swamps of the shallow crustal caves. Year after year he will penetrate deeper, through giant corridors, lowered over immense precipices, descending past the level where his descent

becomes ascent. Undreamt-of aircraft may yet hum in the bowels of the earth, road-clearers and tunnelling apparatus beat in an alien air.

What will men find in their penetration of the subterranean? Mineral composite scarce and barely procurable at the surface, radium pits, new sources of power and energy, may lie awaiting discovery in immense deposits. Galleries and temples of strange beauty and wonder will astound the adventurer, strange perfumes and strange plants discover themselves to the explorer from the upper world. Under our feet there is a world to win.

And that some intrepid Hanno of the far future will yet penetrate to the Great Cavern itself there can be no doubt. What will he find? A dense murkiness, airless, an abysmal cold, or a new world, virgin, metallic-

shored, bathed in a wan electric twilight ?

It may be that the future home of mankind, when the last great Ice Age oversweeps the world, when the dying sun contracts and its light and heat diminish, lies within the womb of our planet. On the shores of the Great Cavern itself may yet be upbuilt the future cities of men.

V

Extraterrestrial

The scientific specialist is only too conscious, in his own department of interest and investigation, of the constant changes and fluctuations, the strange drifting mists of the inexplicable, the noise, the turmoil, and the shouting. Rest there is nowhere. Yet, because men have scarcely attempted the upbuilding of a workable Philosophy of Change, a stable background to life is sought after as a desperate necessity. So the revolutionary chemist is politically a conservative, the relativist in mathematics a dogmatist in religion, the astronomer profoundly convinced—from long and detailed investigation—

of the inhabitability of one planet is as unshakably certain—from hearsay—of the uninhabitability of another.

At least half the *a priori* beliefs of the sciences are built on exploded falsehoods. The task of seeking out new foundations, tracing new lines of correlation and sequence, appals the investigator willing enough to forge ahead into the unknown. To return again and again to re-establish your base and lines of communication are disheartening tasks for any expedition.

But in astronomy, more than in any science, is this required. Half the theories regarding the growth and ageing of the planetary bodies have been deduced from the supposed "deadness" of the moon. That it should be anything else but a dead body circling through the void of space irritates and exasperates the astronomer anxious to apply con-

clusions from his long-held belief. The moon's demise has so long been celebrated that to any signs of stirring upon the supposed corpse eyes are either shut or else tortuous and ingenious theories of illusion are advanced.

The researches of Professor W. H. Pickering, the greatest modern authority upon the moon, have quite definitely established that volcanic action prevails on large portions of the moon-surface, that snow-lines ridge many a hill and valley, that, under a thin and tenuous atmosphere, and in the deeper craters and canyons, a lunar vegetation almost certainly creeps to being with the sunrise, passes through three seasons, in the space of fourteen terrestrial days, and wilts again into the winter of the moon's night. Our satellite has as little claim to be regarded by modern science as a

dead world as it had to be regarded, by the Medieval Church, as a spotless one.

Whether or not we view the fact with the ironic horror of an Anatole France, the "disease" of organic life is undoubtedly not confined to this planet. Mars and Venus both possess envelopes of atmosphere. Principally as a result of the Mount Wilson observations, it is now generally conceded that there is both water and vegetation on Mars. This concession wrung, with a sulky reluctance, from his contemporaries, Professor Lowell went on to propound the even more heretical belief in the existence of artificial canals. But at these, in the absence of the Martian blue-prints and engineering formulæ which preceded their excavation, the astronomical world still balks.

Amusingly, the Martians disturb the sleep and the stable background

of Professor Pickering; he disbelieves in them and their canals because he has discovered "canals" on the moon. Similarly Professor Lowell derives much satisfaction from the belief that the moon is comfortably dead.

Indeed, writing in *Mars as the Abode of Life*, Professor Lowell displays even more naively the characteristics of the revolutionist-conservative. Of the Martians of the canal-building he says "but body is the last thing we are likely to know of them".

It will probably be the first.

Neither Mars nor the moon, possessing, as each does, an atmosphere, need nowadays be considered unexplorable, once the ether is spanned and their shores attained. Interplanetary communication, however, is still merely a subject for discussion. Those against breaking our isolation in space are so for a number of reasons,

the most cogent of which appears to be that they consider it impossible. The Planetary Progressives have generally put forward a case as poor, certainly as timid. By communication is meant only signalled communication. We will demonstrate on great desert areas, by means of lighted triangles and the like, our knowledge of Euclid, and await corresponding geometrical successes to sprout forth upon the other planets. The fact of the Martians or Venusians having probably to a man long ago out-Einsteined Einstein, and, in a passion of pity for our ignorance, attempting to demonstrate *their* mathematical conclusions in lighted inter-whorls which every conventional terrestrial astronomer would swear were natural phenomena, is taken insufficiently into account.

The possibility of actual physical communication is generally timidly

banished into the remote future, to vehicles propelled by induced radio-activity. Here and there some wild soul, experimenting in a back garden with rockets and the like, will now and again proclaim to an intrigued and hilarious Press belief in the power of his invention to bombard the nearest heavenly body with projectiles containing proofs of our cultural progress. . . . One is left with vision of a staggered Lunarian surveying a week-old copy of *Tit-Bits*, whilst at his feet, amongst other disgorgements, lies a specimen contraceptive apparatus.

Though it is improbable that the lone experimentalist will ever succeed in inventing a machine capable of discharging a projectile-carriage at sufficient speed to pass beyond the earth's gravitational pull, it may be presumed with certainty that the first traversement of space will not be

left to either our remote descendants or Mr. Haldane's synthetic supplanters. Given ten years, a well-equipped laboratory and a competent staff of assistants, there is hardly an expert artillery officer, well-grounded in chemistry, but could succeed in achieving inter-planetary communication with experimental projectiles. Practical advances in the science of ballistics have, since the European War, been all too frequently concealed behind patriotic smoke-screens.

Within the next half century there is no reason why the moon, at least, should not be reached, even though the main explosive force behind the projectile may be Signor Mussolini in pursuit of an Italian Empire.

There is a great rock-tundra upon the moon, the Oceanus Procellarum. On its western fringes, in lat. 10 degrees

S., long. 20 degrees E., lies the great crater of Copernicus, of all Lunar landmarks the most interesting to the selenographer. Before the first actual exploration is attempted by men, it is probable that by the firing of experimental projectiles sufficient data will have been gathered to allow of positioning landings in advance. The eastern Oceanus Procellarum is likely to be selected as the landing-ground of the first terrestrial expedition.

Several projectiles, fired at intervals, will probably be used in conveying the personnel of the expedition. The first space-carriage will be planned to reach the moon some time after the lunar mid-day; of its five or six occupants it is to be hoped that Reuter's correspondent will need no urging in being the first to emerge and test the density of the atmosphere.

Emerging from the projectile, this

advance party of explorers will probably attempt to make Copernicus, climb its high buttresses, or pass through the long ravine-cracks which probably splinter its walls, and at last determine the nature of the colour-change that tinges its floors in varying shades. Even allowing for the slightness of the air and the fatigue of marching upon rock-surface never touched by moisture, the party, equipped with high pressure oxygen apparatus, and aided by the low lunar gravitational pull, will probably long before the sunset have entered and explored Copernicus, and have established the nearest and easiest route between the crater-bottom and the projectile. Then, allowing a safe margin of twenty-four hours or so, they will re-enter the projectile and await the coming of a night with a temperature as low as that of outer space.

Somewhere within the sunset the descent of the second projectile, like a livid falling star, will be seen by the first explorers ten or twenty miles across the Procellarum. In the depths of the lunar night, invisible in the airless frozenness, the third projectile will probably fall. At dawn, in the unthawing of the hoar-air, rocket-signals will summon the three exploring parties together across the rock-tundra. The united expedition will then decide upon a base of exploration. Probably this will largely depend upon the results gained from the previous day's exploration of Copernicus, or from the site of the largest space-carriage, which will contain the main components of the apparatus to be erected for re-establishing projectile-communication with the earth.

Leaving a base party to erect apparatus and establish camp, a main

body will march out on a previously determined route of exploration. Besides respirators, it will carry a supply of highly concentrated foods; probably chemicals capable of being dissolved actinically into drinking water and other liquids. It will also bear a supply of powerful explosive, solutions for raw-burning, and probably several heavy elephant guns. It will be prepared for an absence of at least four months—four lunar days and nights.

From Copernicus, marching N.N.E., this party will reach in lat. 14 degrees N., the great "crater" of Eratosthenes, a wide, deep-sunken valley ringed by towering walls. Branching north-eastwards from its centre are the mysterious "canals" of Professor Pickering, and for the first terrestrial explorers it will be to pass along the bed or banks of these, and, in Eratosthenes, look down upon a

valley either lush in vegetation, watered and alive, or upon a saline waste streaked in belts of carbonic acid gas.

With the giant bulking of Eratosthenes, mysterious no longer, behind them, the party will probably set to threading the dead rock-stretches eastwards and gain a fringe of the Carpathian Mountains. Somewhere, on an eastern shoulder of these lunar high lands, they will—if the night overtakes them early—blast out a sleeping-place for the long hours of darkness and cold. It will be lit and warmed with crude-burning chemicals. Probably, across the miles of waste-land, the base party beyond Copernicus will see the red flare-signal of the easterning explorers from some far Carpathian ridge.

Or it may be that before sunset, the party will reach the mountains south of Herodotus, in Schroter's valley,

where the volcanoes still play and their drifting gases whorl in the thin lunar atmosphere. There in some cavern on a crater-side they will find shelter for the first night of their march.

From Schroter's valley strange "rivulets" branch out into the surrounding deserts and there dwindle and die. Whether they are sun-cracks or old stream-beds, whether water still flows—or ever flowed—in them will be settled by our expedition in the next moon-dawn. Then, down through the Valley, the expedition will probably pass out on a northwards march, across the deserts of the Mare Imbrium, with their far goals the passage of the Teneriffe Mountains, the survey of the great deep-sunken pit that is the crater Plato, and the ultimate attainment of the Lunar North Pole.

One sits and plots a fascinating route across the dim sun-glare of lands at

the hither side of space. Looking through the telescope at the strange, unattained world a quarter of a million miles away, that march and exploration ceases to be an idle dream. Yet ordeals at which we can only guess may delay it. Those first explorers may never attain Copernicus; they may never pass out of Eratosthenes. They may be murdered by monsters, slain by giant plants, asphyxiated in sudden ravines. They may come on dagger-set plains of glass, on heights where the air fails completely, on pits and traps beyond our concept. In lands beyond human ken and human aid they will adventure terribly.

That our satellite will ever remain ultra-Arctic, bleak and forbidding, in the eyes of the tourist, the colonist, and the company promoter, seems certain. If alien life can survive at all upon its surface, it is unlikely to

flourish there. For ever lacking such aids as aircraft or mechanically propelled land transport, exploration of the near moon-surface will take many scores of years, while the farther face, dark, unmapped, telescopically invisible, is likely to long remain untraversed by terrestrial caravans.

The inevitable triumph of ballistics that will enable men to explore the lunar deserts may soon elsewhere uprear

> "Upon the night's starr'd face
> Huge cloudy symbols of a high romance."

At the moment of writing, Mr. Robert Condit, of Miami, Florida, has announced his intention of attempting to reach Venus within the next few weeks. His apparatus, a "rocket" to be propelled by the firing of successive explosive chambers, is reported to be almost completed. By

the time these pages are in print, Mr. Condit, in some Venusian jungle, may be exhausting his camera supplies and regretting the omission of a machine-gun from his armoury. After the moon, however, it is likely that Mars will be the first extraterrestrial body which the serious explorer will attempt.

Within the next few years they of the blood and tradition of Hanno, daring the unknown in staggering voyage forty million miles from home, may yet attain the great Thaumasian desert, drift in light aircraft across the reddish sea-bottoms to the Solis Lucus, achieve communication with the Areians of the great oases, reach the Tithonian Canal and follow its course down to the Tithonian Lucus, drifting under the bright Martian stars and the shrunken Martian sun, above Nilotic strips of swamp and cultivation and tawny

waste; watch, in a creeping red Martian twilight, the upspringing of strange lights and infernal challenges.

. . .

Looking up at night upon the untrodden starfields, it needs no robust faith to believe that in the Future of Exploration lies the Future of Mankind.

TO-DAY AND TO-MORROW

Each, poti 8vo, boards, 2/6 net

THIS series of books, by some of the most distinguished English thinkers, scientists, philosophers, doctors, critics, and artists, was at once recognized as a noteworthy event. Written from various points of view, one book frequently opposing the argument of another, they provide the reader with a stimulating survey of the most modern thought in many departments of life. Several volumes are devoted to the future trend of Civilization, conceived as a whole; while others deal with particular provinces. It is interesting to see in these neat little volumes, issued at a low price, the revival of a form of literature, the Pamphlet, which has been in disuse for many years.

Published by
KEGAN PAUL, TRENCH, TRUBNER & CO., LTD.
Broadway House: 68-74 Carter Lane, London, E.C.4

CLASSIFIED INDEX

GENERAL

MARRIAGE AND MORALS

SCIENCE AND MEDICINE

INDUSTRY AND THE MACHINE

WAR

FOOD AND DRINK

* In preparation but not yet published.

CLASSIFIED INDEX

SOCIETY AND THE STATE

GREAT BRITAIN, THE EMPIRE, AND AMERICA

LANGUAGE AND LITERATURE

ART, ARCHITECTURE, MUSIC, DRAMA, ETC.

SPORT AND EXPLORATION

MISCELLANEOUS

* In preparation, but not yet published.

TO-DAY AND TO-MORROW

FROM THE REVIEWS

Times Literary Supplement "An entertaining series of vivacious and stimulating studies of modern tendencies."

Spectator "Scintillating monographs . . . that very lively and courageous series."

Observer: "There seems no reason why the brilliant To-day and To-morrow Series should come to an end for a century of to-morrows. At first it seemed impossible for the publishers to keep up the sport through a dozen volumes, but the series already runs to more than two score. A remarkable series. . . ."

Daily Telegraph "This admirable series of essays, provocative and brilliant."

Nation. "We are able to peer into the future by means of that brilliant series [which] will constitute a precious document upon the present time."—*T. S. Eliot.*

Manchester Dispatch. "The more one reads of these pamphlets, the more avid becomes the appetite. We hope the list is endless."

Irish Statesman: "Full of lively controversy"

Daily Herald "This series has given us many monographs of brilliance and discernment . . The stylistic excellencies of this provocative series."

Field: "We have long desired to express the deep admiration felt by every thinking scholar and worker at the present day for this series. We must pay tribute to the high standard of thought and expression they maintain. As small gift-books, austerely yet prettily produced, they remain unequalled of their kind. We can give but the briefest suggestions of their value to the student, the politician, and the voter. . . ."

New York World. "Holds the palm in the speculative and interpretative thought of the age."

VOLUMES READY

Daedalus, or Science and the Future. By J. B. S. HALDANE, Reader in Biochemistry, University of Cambridge. *Eighth impression.*

"A fascinating and daring little book" —*Westminster Gazette.* "The essay is brilliant, sparkling with wit and bristling with challenges"—*British Medical Journal*

"Predicts the most startling changes" —*Morning Post*

Icarus, or the Future of Science. By BERTRAND RUSSELL, F.R.S *Fourth impression.*

"Utter pessimism" — *Observer.* "Mr Russell refuses to believe that the progress of Science must be a boon to mankind"— *Morning Post* "A stimulating book, that leaves one not at all discouraged"—*Daily Herald*

What I Believe. By BERTRAND RUSSELL, F.R.S. *Fourth impression.*

"One of the most brilliant and thought-stimulating little books I have read—a better book even than *Icarus*"—*Nation.* "Simply and brilliantly written"—*Nature.* "In stabbing sentences he punctures the bubble of cruelty, envy, narrowness, and ill-will which those in authority call their morals."—*New Leader.*

TO-DAY AND TO-MORROW

Callinicus, a Defence of Chemical Warfare. By J. B. S. HALDANE. *Second impression.*

"Mr Haldane's brilliant study."—*Times Leading Article.* "A book to be read by every intelligent adult."—*Spectator* "This brilliant little monograph."—*Daily News.*

Tantalus, or the Future of Man. By F. C. S. SCHILLER, D.Sc., Fellow of Corpus Christi College, Oxford. *Second impression.*

"They are all (*Daedalus, Icarus,* and *Tantalus*) brilliantly clever, and they supplement or correct one another"—*Dean Inge,* in *Morning Post* "Immensely valuable and infinitely readable"—*Daily News.* "The book of the week."—*Spectator.*

Cassandra, or the Future of the British Empire. By F. C. S. SCHILLER, D.Sc. *Second impression.*

"We commend it to the complacent of all parties."—*Saturday Review.* "The book is small, but very, very weighty; brilliantly written, it ought to be read by all shades of politicians and students of politics."—*Yorkshire Post.* "Yet another addition to that bright constellation of pamphlets."—*Spectator.*

Quo Vadimus? Glimpses of the Future. By E. E. FOURNIER D'ALBE, D.Sc. *Second impression.*

"A wonderful vision of the future. A book that will be talked about."—*Daily Graphic.* "A remarkable contribution to a remarkable series."—*Manchester Dispatch.* "Interesting and singularly plausible."—*Daily Telegraph.*

Thrasymachus, the Future of Morals. By C. E. M. JOAD. *Second impression.*

"His provocative book"—*Graphic* "Written in a style of deliberate brilliance" —*Times Literary Supplement* "As outspoken and unequivocal a contribution as could well be imagined Even those readers who dissent will be forced to recognize the admirable clarity with which he states his case A book that will startle"—*Daily Chronicle*

Lysistrata, or Woman's Future and Future Woman. By ANTHONY M LUDOVICI, author of "A Defence of Aristocracy," etc. *Second impression.*

"A stimulating book Volumes would be needed to deal, in the fulness his work pro vokes, with all the problems raised"—*Sunday Times* "Pro-feminine but anti-feministic" —*Scotsman* "Full of brilliant common-sense"—*Observer*

Hypatia, or Woman and Knowledge By MRS BERTRAND RUSSELL. With a frontispiece. *Third impression.*

An answer to *Lysistrata* "A passionate vindication of the rights of woman"— *Manchester Guardian* "Says a number of things that sensible women have been wanting publicly said for a long time"—*Daily Herald*

Hephaestus, the Soul of the Machine. By E. E. FOURNIER D'ALBE, D.Sc.

"A worthy contribution to this interesting series A delightful and thought-provoking essay"—*Birmingham Post* "There is a special pleasure in meeting with a book like *Hephaestus* The author has the merit of really understanding what he is talking about" —*Engineering* "An exceedingly clever defence of machinery"—*Architects' Journal*

TO-DAY AND TO-MORROW

The Conquest of Cancer. By H. W. S. WRIGHT, M.S., F.R.C.S. Introduction by F. G. CROOKSHANK, M.D.

"Eminently suitable for general reading. The problem is fairly and lucidly presented One merit of Mr Wright's plan is that he tells people what, in his judgment, they can best do, *here and now*"—From the *Introduction*.

Pygmalion, or the Doctor of the Future. By R. MCNAIR WILSON, M.B.

"Dr Wilson has added a brilliant essay to this series"—*Times Literary Supplement*
"This is a very little book, but there is much wisdom in it"—*Evening Standard*. "No doctor worth his salt would venture to say that Dr Wilson was wrong"—*Daily Herald*.

Prometheus, or Biology and the Advancement of Man. By H. S. JENNINGS, Professor of Zoology, Johns Hopkins University. *Second impression.*

"This volume is one of the most remarkable that has yet appeared in this series. Certainly the information it contains will be new to most educated laymen. It is essentially a discussion of . . heredity and environment, and it clearly establishes the fact that the current use of these terms has no scientific justification"—*Times Literary Supplement*
"An exceedingly brilliant book."—*New Leader*

Galatea, or the Future of Darwinism. By W. RUSSELL BRAIN.

"A brilliant exposition of the present position of the evolutionary hypothesis, he writes clearly and temperately."—*Guardian*.
"Should prove invaluable. A stimulating and well-written essay"—*Literary Guide*
"His destructive criticism of the materialist and mechanist philosophy, biology, and physics is superb."—*G. K.'s Weekly*.

Narcissus: an Anatomy of Clothes. By GERALD HEARD. With 19 illustrations. *Second impression.*

"A most suggestive book"—*Nation* "Irresistible Reading it is like a switchback journey. Starting from prehistoric times we rocket down the ages"—*Daily News* "Interesting, provocative, and entertaining"—*Queen*

Thamyris, or Is There a Future for Poetry? By R. C. TREVELYAN.

"Learned, sensible, and very well-written"—*Affable Hawk*, in *New Statesman* "Very suggestive"—*J C Squire*, in *Observer* "A very charming piece of work, I agree with all, or at any rate, almost all its conclusions"—*J St Loe Strachey*, in *Spectator.*

Proteus, or the Future of Intelligence. By VERNON LEE, author of "Satan the Waster," etc.

"We should like to follow the author's suggestions as to the effect of intelligence on the future of Ethics, Aesthetics, and Manners Her book is profoundly stimulating and should be read by everyone"—*Outlook* "A concise, suggestive piece of work"—*Saturday Review*

Timotheus, the Future of the Theatre. By BONAMY DOBRÉE, author of "Restoration Drama," etc.

"A witty, mischievous little book, to be read with delight"—*Times Literary Supplement.* "This is a delightfully witty book."—*Scotsman* "In a subtly satirical vein he visualizes various kinds of theatres in 200 years' time His gay little book makes delightful reading"—*Nation.*

TO-DAY AND TO-MORROW

Paris, or the Future of War. By Captain B. H. LIDDELL HART.

"A companion volume to *Callinicus* A gem of close thinking and deduction" —*Observer.* "A noteworthy contribution to a problem of concern to every citizen in this country."—*Daily Chronicle.* "There is some lively thinking about the future of war in *Paris,* just added to this set of live-wire pamphlets on big subjects."—*Manchester Guardian*

Wireless Possibilities. By Professor A. M. Low. With 4 diagrams.

"As might be expected from an inventor who is always so fresh, he has many interesting things to say."—*Evening Standard.* "The mantle of Blake has fallen upon the physicists To them we look for visions, and we find them in this book"—*New Statesman*

Perseus: of Dragons. By H. F. SCOTT STOKES. With 2 illustrations.

"A diverting little book, chock-full of ideas Mr Stokes' dragon-lore is both quaint and various."—*Morning Post* "Very amusingly written, and a mine of curious knowledge for which the discerning reader will find many uses."—*Glasgow Herald.*

Lycurgus, or the Future of Law. By E. S. P. HAYNES, author of "Concerning Solicitors," etc.

"An interesting and concisely written book." —*Yorkshire Post.* 'He roundly declares that English criminal law is a blend of barbaric violence, medieval prejudices and modern fallacies. . . . A humane and conscientious investigation."—*T P.'s Weekly.* "A thoughtful book—deserves careful reading"—*Law Times.*

Euterpe, or the Future of Art. By LIONEL R. MCCOLVIN, author of "The Theory of Book-Selection."

"Discusses briefly, but very suggestively, the problem of the future of art in relation to the public."—*Saturday Review* "Another indictment of machinery as a soul-destroyer . . Mr Colvin has the courage to suggest solutions."—*Westminster Gazette.* "This is altogether a much-needed book."—*New Leader*

Pegasus, or Problems of Transport. By Colonel J. F. C. FULLER, author of "The Reformation of War," etc. With 8 Plates.

"The foremost military prophet of the day propounds a solution for industrial and unemployment problems It is a bold essay . . and calls for the attention of all concerned with imperial problems."—*Daily Telegraph.* "Practical, timely, very interesting and very important."—*J. St. Loe Strachey,* in *Spectator*

Atlantis, or America and the Future. By Colonel J. F. C. FULLER.

"Candid and caustic."—*Observer.* "Many hard things have been said about America, but few quite so bitter and caustic as these" —*Daily Sketch* "He can conjure up possibilities of a new Atlantis"—*Clarion*

Midas, or the United States and the Future. By C. H. BRETHERTON, author of "The Real Ireland," etc.

A companion volume to *Atlantis.* "Full of astute observations and acute reflections . . . this wise and witty pamphlet, a provocation to the thought that is creative."—*Morning Post.* "A punch in every paragraph. One could hardly ask for more 'meat'."—*Spectator.*

TO-DAY AND TO-MORROW

Nuntius, or Advertising and its Future. By GILBERT RUSSELL.

"Expresses the philosophy of advertising concisely and well"—*Observer* "It is doubtful if a more straightforward exposition of the part advertising plays in our public and private life has been written"—*Manchester Guardian.*

Birth Control and the State: a Plea and a Forecast. By C. P. BLACKER, *M.C.*, M.A., M.R.C.S., L.R.C.P.

"A very careful summary"—*Times Literary Supplement* "A temperate and scholarly survey of the arguments for and against the encouragement of the practice of birth control."—*Lancet* "He writes lucidly, moderately, and from wide knowledge; his book undoubtedly gives a better understanding of the subject than any other brief account we know It also suggests a policy"—*Saturday Review.*

Ouroboros, or the Mechanical Extension of Mankind. By GARET GARRETT.

"This brilliant and provoking little book"—*Observer* "A significant and thoughtful essay, calculated in parts to make our flesh creep"—*Spectator* "A brilliant writer, Mr Garrett is a remarkable man He explains something of the enormous change the machine has made in life."—*Daily Express*

Artifex, or the Future of Craftsmanship. By JOHN GLOAG, author of "Time, Taste, and Furniture."

"An able and interesting summary of the history of craftsmanship in the past, a direct criticism of the present, and at the end his hopes for the future. Mr Gloag's real contribution to the future of craftsmanship is his discussion of the uses of machinery."—*Times Literary Supplement*

Plato's American Republic. By J. DOUGLAS WOODRUFF *Fourth impression.*

'Uses the form of the Socratic dialogue with devastating success A gently malicious wit sparkles in every page "—*Sunday Times* "Having deliberately set himself an almost impossible task, has succeeded beyond belief" —*Saturday Review* "Quite the liveliest even of this spirited series"—*Observer*

Orpheus, or the Music of the Future By W J. TURNER, author of "Music and Life" *Second impression*

"A book on music that we can read not merely once, but twice or thrice Mr Turner has given us some of the finest thinking upon Beethoven that I have ever met with"—*Ernest Newman* in *Sunday Times* "A brilliant essay in contemporary philosophy" —*Outlook* "The fruit of real knowledge and understanding"—*New Statesman*

Terpander, or Music and the Future By E J. DENT, author of "Mozart's Operas."

"In *Orpheus* Mr Turner made a brilliant voyage in search of first principles Mr Dent's book is a skilful review of the development of music It is the most succinct and stimulating essay on music I have found "—*Musical News* "Remarkably able and stimulating" —*Times Literary Supplement* "There is hardly another critic alive who could sum up contemporary tendencies so neatly"—*Spectator*

Sibylla, or the Revival of Prophecy. By C A MACE, University of St Andrew's.

'An entertaining and instructive pamphlet" —*Morning Post* Places a nightmare before us very ably and wittily"—*Spectator* "Passages in it are excellent satire, but on the whole Mr Mace's speculations may be taken as a trustworthy guide to modern scientific thought"—*Birmingham Post*

TO-DAY AND TO-MORROW

Lucullus, or the Food of the Future. By OLGA HARTLEY and MRS C F. LEYEL, authors of "The Gentle Art of Cookery."

"This is a clever and witty little volume in an entertaining series, and it makes enchanting reading"—*Times Literary Supplement* 'Opens with a brilliant picture of modern man, living in a vacuum cleaned, steam-heated, credit furnished suburban mansion 'with a wolf in the basement'—the wolf of hunger This banquet of epigrams"—*Spectator*

Procrustes, or the Future of English Education By M ALDERTON PINK.

Undoubtedly he makes out a very good case'—*Daily Herald* This interesting addition to the series"—*Times Educational Supplement* "Intends to be challenging and succeeds in being so All fit readers will find it stimulating"—*Northern Echo*

The Future of Futurism. By JOHN RODKER

'Mr Rodker is up-to the minute, and he has accomplished a considerable feat in writing on such a vague subject, 92 extremely interesting pages"—*T S Eliot*, in *Nation* 'There are a good many things in this book which are of interest"—*Times Literary Supplement*

Pomona, or the Future of English By BASIL DE SÉLINCOURT, author of "The English Secret," etc

The future of English is discussed fully and with fascinating interest"—*Morning Post* "Full of wise thoughts and happy words"—*Times Literary Supplement* 'His later pages must stir the blood of any man who loves his country and her poetry"—*J C Squire*, in *Observer* 'His finely-conceived essay'—*Manchester Guardian*

Balbus, or the Future of Architecture. By CHRISTIAN BARMAN.

"A really brilliant addition to this already distinguished series. The reading of *Balbus* will give much data for intelligent prophecy, and incidentally, an hour or so of excellent entertainment."—*Spectator.* "Most readable and reasonable. We can recommend it warmly"—*New Statesman* "This intriguing little book"—*Connoisseur.*

Apella, or the Future of the Jews. By A QUARTERLY REVIEWER.

"Cogent, because of brevity and a magnificent prose style, this book wins our quiet praise It is a fine pamphlet, adding to the value of the series, and should not be missed" —*Spectator* "A notable addition to this excellent series His arguments are a provocation to fruitful thinking"—*Morning Post*

The Dance of Civa, or Life's Unity and Rhythm. By COLLUM.

"It has substance and thought in it The author is very much alive and responsive to the movements of to-day"—*Spectator* "A very interesting account of the work of Sir Jagadis Bose"—*Oxford Magazine* "Has caught the spirit of the Eastern conception of world movements"—*Calcutta Statesman*

Lars Porsena, or the Future of Swearing and Improper Language. By ROBERT GRAVES. *Fourth impression.*

"Goes uncommonly well, and deserves to"—*Observer* "Not for squeamish readers" —*Spectator.* "No more amusingly unexpected contribution has been made to this series. A deliciously ironical affair"—*Bystander* "His highly entertaining essay is as full as the current standard of printers and police will allow"—*New Statesman* "Humour and style are beyond criticism."—*Irish Statesman.*

Socrates, or the Emancipation of Mankind. By H. F. CARLILL.

"Devotes a specially lively section to the herd instinct"—*Times* "Clearly, and with a balance that is almost Aristotelian, he reveals what modern psychology is going to accomplish"—*New Statesman* "One of the most brilliant and important of a remarkable series."—*Westminster Gazette*

Delphos, or the Future of International Language. By E. SYLVIA PANKHURST.

"Equal to anything yet produced in this brilliant series Miss Pankhurst states very clearly what all thinking people must soon come to believe, that an international language would be one of the greatest assets of civilization"—*Spectator.* "A most readable book, full of enthusiasm, an important contribution to this subject"—*International Language*

Gallio, or the Tyranny of Science. By J. W. N. SULLIVAN, author of "A History of Mathematics."

"So packed with ideas that it is not possible to give any adequate *résumé* of its contents"—*Times Literary Supplement* "His remarkable monograph, his devastating summary of materialism, this pocket *Novum Organum*"—*Spectator* "Possesses a real distinction of thought and manner. It must be read."—*New Statesman*

Apollonius, or the Future of Psychical Research. By E. N. BENNETT, author of "Problems of Village Life," etc.

"A sane, temperate and suggestive survey of a field of inquiry which is slowly but surely pushing to the front"—*Times Literary Supplement* "His exposition of the case for psychic research is lucid and interesting"—*Scotsman.* "Displays the right temper, admirably conceived, skilfully executed"—*Liverpool Post.*

Aeolus, or the Future of the Flying Machine. By OLIVER STEWART.

"Both his wit and his expertness save him from the nonsensical-fantastic. There is nothing vague or sloppy in these imaginative forecasts"—*Daily News* "He is to be congratulated His book is small, but it is so delightfully funny that it is well worth the price, and there really are sensible ideas behind the jesting"—*Aeroplane*

Stentor, or the Press of To-Day and To-Morrow. By DAVID OCKHAM.

"A valuable and exceedingly interesting commentary on a vital phase of modern development"—*Daily Herald* "Vigorous and well-written, eminently readable."—*Yorkshire Post* "He has said what one expects any sensible person to say about the 'trustification of the Press"—*Spectator*

Rusticus, or the Future of the Countryside. By MARTIN S. BRIGGS, F.R.I.B.A.

"Few of the 50 volumes, provocative and brilliant as most of them have been, capture our imagination as does this one"—*Daily Telegraph* "The historical part is as brilliant a piece of packed writing as could be desired" —*Daily Herald* "Serves a national end The book is in essence a pamphlet, though it has the form and charm of a book"—*Spectator*

Janus, or the Conquest of War. By WILLIAM MCDOUGALL, M.B., F.R.S.

"Among all the booklets of this brilliant series, none, I think is so weighty and impressive as this It contains thrice as much matter as the other volumes, and is profoundly serious"—*Dean Inge*, in *Evening Standard* "A deeply interesting and fair-minded study of the causes of war and the possibilities of their prevention. Every word is sound"—*Spectator.*

TO-DAY AND TO-MORROW

Vulcan, or the Future of Labour. By CECIL CHISHOLM.

"Of absorbing interest"—*Daily Herald* "No one, perhaps, has ever held the balance so nicely between technicalities and flights of fancy, as the author of this excellent book in a brilliant series Between its covers knowledge and vision are pressed down and brimming over"—*Spectator*

Hymen, or the Future of Marriage. By NORMAN HAIRE. *Second impression.*

"Has something serious to say, something that may be of value, Dr Haire is, fortunately, as lucid as he is bold"—*Saturday Review* "An electrifying addition to the series" *Sphere* "Not cheerful reading Yet in spite of this we feel that the book repays perusal"—*Spectator* "A very good book, brilliant, arresting"—*Sunday Worker*

The Next Chapter: the War against the Moon. By ANDRÉ MAUROIS.

"This delicate and delightful phantasy presented with consummate art"—*Spectator* 'Short but witheringly sarcastic"—*Field* "Admirably parodies the melancholy and superior tone of a history-book "—*Times Literary Supplement* "A delicious skit on the newspaper 'stunt', and a wholesome satire on some of the abiding weaknesses of mankind"—*Daily Telegraph*

Archon, or the Future of Government. By HAMILTON FYFE.

"Well written and abounds in epigram This is a brave and sincere book"—*Economic Review* "As stern a critic of our present Party system as any Tory could be"—*H W Nevinson*, in *Daily Herald* "A brochure that thinking people will discuss"—*Spectator* "A timely exposure of the hypocrisy of politics"—*Harold Cox*, in *Sunday Times*

Scheherazade, or the Future of the English Novel. By JOHN CARRUTHERS.

"An entertaining and stimulating book which no novel-reader should fail to study"—*Osbert Sitwell*, in *Daily Mirror* "A brilliant essay and, I think, a true one It deserves the attention of all in any way interested critically in the novel"—*Geoffry West*, in *Daily Herald*

Iconoclastes, or the Future of Shakespeare. By HUBERT GRIFFITH.

"To my disappointment I found myself in complete agreement with nearly all its author's arguments There is much that is vital and arresting in what he has to say" —*Nigel Playfair*, in *Evening Standard* "With much that Mr Griffith says I entirely agree" —*Saturday Review*

Caledonia, or the Future of the Scots By G. M. THOMSON. *Second impression*

"Not since the late T W H Crosland has anything like so amazing an indictment of Scotland appeared"—*Westminster Gazette* "It is relentless and terrible in its exposure of the realities that underlie the myth of the 'canny Scot' I have found scarcely an exaggeration in the whole of this brilliant book"—*Irish Statesman* "As a piece of incisive writing and powerful, though restrained, invective, *Caledonia* is specially notable"—*Spectator*

Albyn, or Scotland and the Future. By C. M. GRIEVE, author of 'Contemporary Scottish Studies,' etc.

"A vigorous answer, explicit and implicit, to *Caledonia*, tracing behind the scenes the development of a real Scottish renascence Contains stuff for thought"—*Spectator* "The book of a man genuinely concerned about the future"—*Glasgow News*

Bacchus, or the Future of Wine. By P MORTON SHAND

"Very sound sense"—*Times Literary Supplement* "A learned and amusingly written book on wine"—*Daily Express* 'An entrancing little volume, prognosticating the future of wine and wine drinking, from a social, commercial, and more especially a vinous point of view"—*Brewer and Wine Merchant*

Hermes, or the Future of Chemistry. By T. W. JONES, B Sc., F C.S.

'Tells us briefly, yet with brilliant clarity, what Chemistry is doing to-day, and what its achievements are likely to be in the future" —*Morning Post* "A complete and readable survey of the chemical developments of to-day, making special reference to bio-chemistry, synthetic fuels, and catalysts"—*Manchester Guardian*

Archimedes, or the Future of Physics. By L L WHYTE

"If the notion [of asymmetrical time] can be successfully applied to physics itself, the universal science will be born That some great synthesis is on the way seems clear One of the most suggestive accounts of it may be found in this fascinating volume"— *Times Literary Supplement* 'This book will be an inspiration The writer is a clear and fearless thinker"—*Discovery*

Atalanta, or the Future of Sport. By G. S SANDILANDS.

"His provocative and most interesting book"—*Daily Herald* "A candid and outspoken personage with a talent for pungency in epigram He covers the whole field"— *Sheffield Telegraph* "Points out some of the pinnacles of unreason climbed by those trying to separate amateur from professional" —*Manchester Guardian*

TO-DAY AND TO-MORROW

Lares et Penates, or the Home of the Future. By H. J. BIRNSTINGL.

"Indicating vividly what may lie ahead if we allow our worship of the American ideal of industrial output for its own sake to proceed undirected."—*Country Life.* "A piquant study of the labour-saving houses of the future."—*T.P.'s Weekly* "Draws an appalling picture."—*Evening Standard.*

Breaking Priscian's Head, or English as She will be Spoke and Wrote. By J. Y. T. GREIG, D.Litt.

"His vivacious book."—*Daily Mail.* "The most vehement attack [on standard English] we have ever read. We are equally amazed and amused."—*Morning Post.* 'Very sensible suggestions for vivifying the English language."—*Star* "Such a rollicking book. He must be thanked."—*Spectator.*

Cain, or the Future of Crime. By GEORGE GODWIN.

"Compels the reader to think, whether he will or no."—*Saturday Review.* "A most interesting prophecy. Mr Godwin makes out a strong case against the stupidity and cruelty of our present dealings with crime."—*Evening Standard.* "Cheerfully devastating."—*Daily Herald.* "His admirable book."—*Outlook.*

Morpheus, or the Future of Sleep. By DAVID FRASER-HARRIS, M.D., D.Sc.

A lucid account of the nature of sleep, with reference to body, brain, and mind, and an analysis of dreaming. A plea is put in for the suppression of avoidable noises, and a forecast is made of the direction which future research will take.

TO-DAY AND TO-MORROW

Hibernia, or the Future of Ireland. By BOLTON C. WALLER.

The prospects of Ireland, economic, cultural, and political, are considered in the light of the new conditions of freedom. Plain spoken criticism of persons and tendencies are not lacking Special attention is paid to the problem of a united Ireland.

Hanno, or the Future of Exploration. By J. LESLIE MITCHELL.

Thousands of miles await the explorer of to-morrow. We know little of the stretching leagues of sea-floor, less of the earth's interior. In helicopter craft the daring will penetrate the Amazonian jungle and the Antarctic waste. The bowels of the earth will be broken into. Inter-planetary communication is not far ahead.

Metanthropos, or the Body of the Future. By R. CAMPBELL MACFIE, LL.D.

The marvellous evolution the body has already achieved provides no clue to its future, nor is it likely to be affected by eugenic measures. Future progress in man's body will depend mainly on a subtle sexual selection of cerebral variations as manifested in mental, moral, and æsthetic qualities, which will have momentous spiritual consequences.

NEARLY READY

Heraclitus, or the Future of the Films. By ERNEST BETTS.

The writer traces the development of the film from its crude but astonishing beginnings as a ' show ' to its future as one of the artistic marvels of the world. The film as an art form, it is contended, really began without any inspiration.

Fortuna, or Chance and Design. By NORWOOD YOUNG.

This is a study of the paradoxical 'laws of chance', as illustrated in the game of roulette, played at Monte Carlo The author discusses the conflict between chance and design He refutes the common belief, upon which all systems of gambling are founded, that in a game of chance the past can affect the future He considers the emotions of gamblers, their hopes, fears, and superstitions.

Autolycus, or the Future for Miscreant Youth. By R. G GORDON, M.D., D.Sc.

What can the medical profession, the social worker, the school teacher, the parent, and the general public do to help the youthful delinquent ? Methods are outlined of dealing with this urgent and difficult problem

Diogenes, or the Future of Leisure By C. E M. JOAD.

In *The Next Chapter* M Maurois brilliantly showed the evil consequences to be expected from an over-abundance of leisure in mankind *Diogenes* conducts a bitter examination of the way in which people do actually employ their leisure, and puts forward some proposals and prophecies for the future

Eos, or the Wider Aspects of Cosmogony. By J. H. JEANS, LL.D., F.R S.

This distinguished piece of work makes clear for the general reader the present position of astronomical science The nature of the earth, the solar system, the stars, and the physical universe in general is discussed with supreme clarity, and their future prospects boldly estimated

TO-DAY AND TO-MORROW

IN PREPARATION

Hestia, or the Future of Home Life. By WINIFRED SPIELMAN.

The future of family life is here considered with reference to the many forces at work to-day for the disruption of the home.

Columbia, or the Future of Canada. By GEORGE GODWIN. Author of 'Cain.'

The future of Canada is worked out from the political, economic, social, and other view points. The possibility of Canada's union with America is discussed, and the American influence is estimated.

Romulus, or the Future of the Child. By ROBERT T. LEWIS.

How will the child live in the future, how will he be treated by parents, nurse and school, what will education become in the future, these are some of the points raised by the author.

The Future of Socialism. By ARTHUR SHADWELL.

The Future of Opera. By DYNELEY HUSSEY, author of "Mozart".

The Future of the Universities. By JULIAN HALL.

The Future of the Sexes. By REBECCA WEST.

The Future of Humour. By ROBERT GRAVES.